```
      1996620 5
         1229 TRIPHOSPHATE#
        60648 TRI
        60151 PHOSPHATE#
          597 TRI PHOSPHATE#
                (TRI(W)PHOSPHATE#)
        60151 PHOSPHATE#
         1220 5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHATE#)
L54         0 L49 AND (5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHAT
              E#))

=> fil medl; d l52 1-11 .beverlymed; fil ca; s template(w)independent
FILE 'MEDLINE' ENTERED AT 13:19:50 ON 10 APR 95

 FILE LAST UPDATED: 7 APR 1995 (950407/UP).  FILE COVERS 1966 TO DATE.
 +QLF/CT SHOWS YOU THE ALLOWABLE QUALIFIERS OF A TERM.

 MEDLINE, CANCERLIT AND PDQ ERRONEOUSLY ANNOTATED CERTAIN ARTICLES
 AUTHORED OR CO-AUTHORED BY DR. BERNARD FISHER WITH THE PHRASE
 "SCIENTIFIC MISCONDUCT-DATA TO BE REANALYZED."  ALL SUCH ANNOTATIONS
 HAVE BEEN REMOVED OR ARE BEING REMOVED.  WE APOLOGIZE FOR ANY PROBLEMS
 OR CONCERNS THIS MAY HAVE CAUSED.  USERS SHOULD DISREGARD THOSE PRIOR
 ANNOTATIONS.


L52  ANSWER 1 OF 11  MEDLINE
AN   91070641     MEDLINE
TI   32P-postlabeling of N-7, N2 and O6 2'-deoxyguanosine
     3'-monophosphate adducts of styrene oxide.
AU   Vodicka P; Hemminki K
SO   Chem Biol Interact, (1991) 77 (1) 39-50.
     Journal code: CYV. ISSN: 0009-2797.
AB   Adducts were prepared by reacting styrene oxide with
     2-deoxyguanosine 3'-monophosphate (dGMP). Four isomeric N-7-, two
     diastereomeric N2- and three isomeric O6-adduct were isolated and
     characterized. The adducts were used as substrates in the
     32P-postlabeling reaction. No phosphorylation products were seen
     with the N-7-alkylation products. One diastereomeric N2-adduct was
     labeled with 20% efficiency and the second with a markedly lower
     efficiency. Two of the three O6-adducts were labeled with 5% and the
     third with 10% labeling efficiency. The results suggest that large
     N-7-dGMP adducts are very poor substrates of T4
   polynucleotide kinase. The diastereomeric products
     are labeled at different efficiencies indicating stereoselectivity
     in the kinase reaction.

L52  ANSWER 2 OF 11  MEDLINE
AN   90370457     MEDLINE
TI   Molecular recognition in the minor groove of the DNA helix. Studies
     on the synthesis of oligonucleotides and
   polynucleotides containing 3-deaza-2'-deoxyadenosine.
     Interaction of the oligonucleotides with the restriction
```

```
        101089 PROD?
         86662 PREP?
         15225 SYNTHES?
           151 (POLYNUCLEOTIDE# OR POLY NUCLEOTIDE#)(5A)(PROD? OR PREP? O
               R SYNTHES?)
         17874 SUBSTRATE#
         69335 3
          2683 HYDROXYL?
            99 3(1W)HYDROXYL?
          1056 NUCLEOSIDE#
         71784 5
           351 TRIPHOSPHATE#
           403 TRI
          9070 PHOSPHATE#
             5 TRI PHOSPHATE#
                 (TRI(W)PHOSPHATE#)
          9070 PHOSPHATE#
           571 5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHATE#)
L53           0 L49 AND (5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHAT
                E#))

=> fil wpids; s l50
FILE 'WPIDS' ENTERED AT 13:16:30 ON 10 APR 95
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FILE LAST UPDATED: 04 APR 95                <950404/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK             9513   <199513/DW>
DERWENT WEEK FOR CHEMICAL CODING:    9505
DERWENT WEEK FOR POLYMER INDEXING:   9509
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> DERWENT POLYMER INDEXING THESAURUS AVAILABLE IN FIELD /PLE <<<
     >>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<
>>> 7 MILLIONTH RECORD AWAITED FOR DW9514. PRIZE DRAW - SEE NEWS <<<
      >>> TIMELINESS OF UPDATING IMPROVED - SEE NEWS <<<



          1082 POLYNUCLEOTIDE#
        105867 POLY
          5605 NUCLEOTIDE#
           121 POLY NUCLEOTIDE#
                 (POLY(W)NUCLEOTIDE#)
       1391251 PROD?
        626003 PREP?
         56388 SYNTHES?
           244 (POLYNUCLEOTIDE# OR POLY NUCLEOTIDE#)(5A)(PROD? OR PREP? O
               R SYNTHES?)
        253035 SUBSTRATE#
       2157840 3
         37421 HYDROXYL?
           506 3(1W)HYDROXYL?
          2148 NUCLEOSIDE#
```

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HAVE BEEN REMOVED OR ARE BEING REMOVED.  WE APOLOGIZE FOR ANY PROBLEMS
OR CONCERNS THIS MAY HAVE CAUSED.  USERS SHOULD DISREGARD THOSE PRIOR
ANNOTATIONS.


          7730 POLYNUCLEOTIDE#
         28718 POLY
        100512 NUCLEOTIDE#
            17 POLY NUCLEOTIDE#
                 (POLY(W)NUCLEOTIDE#)
        604837 PROD?
        260909 PREP?
        258753 SYNTHES?
           325 (POLYNUCLEOTIDE# OR POLY NUCLEOTIDE#)(5A)(PROD? OR PREP? O
               R SYNTHES?)
        103896 SUBSTRATE#
       1194885 3
         50319 HYDROXYL?
          1016 3(1W)HYDROXYL?
         18877 NUCLEOSIDE#
        951877 5
         62629 TRIPHOSPHATE#
          5109 TRI
        101701 PHOSPHATE#
            54 TRI PHOSPHATE#
                 (TRI(W)PHOSPHATE#)
        101701 PHOSPHATE#
          9822 5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHATE#)
L51           12 L49 AND (5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHAT
                 E#))

=> s l51 not (l17 or l41); fil biotechds; s l50
L52           11 L51 NOT (L17 OR L41)


FILE 'BIOTECHDS' ENTERED AT 13:16:00 ON 10 APR 95
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FILE LAST UPDATED: 19 MAR 95      <950319/UP>
>>> USE OF THIS FILE IS LIMITED TO BIOTECH SUBSCRIBERS <<<
>>> A THESAURUS IS AVAILABLE IN FIELD CT <<<


           778 POLYNUCLEOTIDE#
          2644 POLY
          6149 NUCLEOTIDE#
             5 POLY NUCLEOTIDE#
                 (POLY(W)NUCLEOTIDE#)
```

Prepn. of single nucleic acid strands comprises attaching a **terminal** deoxynucleotidyl-**transferase** and a ribonucleoside triphosphate to the 3'-posn. of a nucleic acid; oxidn. to obtain a nucleic acid with a pendant -CHO gp.; condensn. with -NH2 gps. attached to a solid carrier; treatment of the immobilised prod. with a primer nucleic acid to form a hybrid; extension of the primer on the hybrid with DNA-polymerase and a nucleoside triphosphate; denaturation of the prod., and sepn. of the sol. and insol. materials obtd. The insol. material is opt. recycled one or more times.

USE - The prods. are components for analytical probes, esp. for clinical analysis and diagnosis.

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FILE 'BIOSIS' ENTERED AT 13:12:27 ON 10 APR 95
COPYRIGHT (C) 1995 BIOSIS(R)

FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 3 April 1995 (950403/ED)
CAS REGISTRY NUMBERS (R) LAST ADDED: 4 April 1995 (950404/UP)

As of December 31, 1993 the BIOSIS File will be updated weekly with
information from both publications.  SDIs will now be run weekly.  For
more information enter HELP UPDATE and HELP COST at an arrow
prompt(=>).

        136135 SUBSTRATE#
       1326532 3
         62495 HYDROXYL?
          1757 3(1W)HYDROXYL?
         19493 NUCLEOSIDE#
L49         93 L37 AND (SUBSTRATE# OR 3(1W)HYDROXYL? OR NUCLEOSIDE#)

=> s l49 and (5(1w)(triphosphate# or tri phosphate# or phosphate#))
         92056 5
         12894 TRIPHOSPHATE#
         54722 TRI
        139576 PHOSPHATE#
          1758 TRI PHOSPHATE#
                 (TRI(W)PHOSPHATE#)
        139576 PHOSPHATE#
           718 5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHATE#)
L50           0 L49 AND (5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHAT
                E#))

=> fil medl; s l50
FILE 'MEDLINE' ENTERED AT 13:14:42 ON 10 APR 95

 FILE LAST UPDATED: 7 APR 1995 (950407/UP).  FILE COVERS 1966 TO DATE.
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PA (MOLE-N) MOLECULAR DIAGNOSTICS INC
CYC 13
PI EP 184056 A 860611 (8624)* EN 13 pp
R: AT BE CH DE FR GB IT LI NL SE
JP 61227785 A 861009 (8647)
US 4734363 A 880329 (8816)
EP 184056 B 900131 (9005) EN
R: AT BE CH DE FR GB IT LI NL SE
CA 1264452 A 900116 (9007)
DE 3575731 G 900308 (9011)
ADT EP 184056 A EP 85-114561 851116; JP 61227785 A JP 85-265160 851127; US 4734363 A US 84-675386 841127; EP 184056 B EP 90-114561 900131
PRAI US 84-675386 841127
AN 86-151265 [24] WPIDS
AB EP 184056 A UPAB: 930922
(1) Structure for producing a specific nucleic acid strand comprises (a) a solid substrate; (b) a single-stranded polynucleotide (I) covalently linked at one end to the solid substrate; and (c) an oligonucleotide (II) hybridised to (I). Component (c) may be a second polynucleotide (III) hybridised to (I), one end of the polynucleotides being complementary to the other end of the other **polynucleotide**. (2) **Prodn**. of a single strand of a nucleic acid comprises (a) covalently linking to a solid substrate a polynucleotide complementary to the desired strand; (b) hybridising the polynucleotide in direction away from the substrate; (d) denaturing the hybridised polynucleotide and extended oligonucleotide; and (e) sepng. the extended oligonucleotide.
USE/ADVANTAGE - Specific nucleic acid sequences can be synthesised on a large scale, without the need for plasmids, cloning **techniques** and restriction, The structure is an intermediate in the synthesis. The sequences produced may be used as probes in clinical diagnosis.
0/0
ABEQ EP 184056 B UPAB: 930922
(1) Structure for producing a specific nucleic acid strand comprises (a) a solid substrate; (b) a single-stranded polynucleotide (I) covalently linked at one end to the solid substrate; and (c) an oligonucleotide (II) hybridised to (I). Component (c) may be a second polynucleotide (III) hybridised to (I), one end of the polynucleotides being complementary to the other end of the other **polynucleotide**. (2) **Prodn**. of a single strand of a nucleic acid comprises (a) covalently linking to a solid substrate a polynucleotide complementary to the desired strand; (b) hybridising the polynucleotide in direction away from the substrate; (d) denaturing the hybridised polynucleotide and extended oligonucleotide; and (e) sepng. the extended oligonucleotide.
USE/ADVANTAGE - Specific nucleic acid sequences can be synthesised on a large scale, without the need for plasmids, cloning **techniques** and restriction, The structure is an intermediate in the synthesis. The sequences produced may be used as probes in clinical diagnosis.
0/0
ABEQ US 4734363 A UPAB: 930922

contg. at least 2 identical template S and contg. at least 1 site specific specific cleavage S, B) cleaving the extension at cleavable PNS into fragments in presence of specific cleavage means, C) dissociating fragments contg. a prim PNS, D) hybridising the fragments with the single stranded PN and E) repeating steps A)-D) simultaneously or (partially) sequentially.

The prim PNS is DNA. The single stranded PN is an oligomer of at least 3 or an identical template S and is esp cyclic.

USE - For the detection of very low concentrations of nucleic acids.

ABEQ EP 300796 B UPAB: 931202

A **method** of **producing** multiple copies of a primary **polynucleotide** sequence located at the 3' terminus of a polynucleotide, which comprises: (a) forming in the presence of nucleoside triphosphates and **template**-dependent polynucleotide **polymerase** an extension of a primary polynucleotide sequence hybridised with a template sequence of a single stranded pattern polynucleotide comprising two or more template sequences each containing one or more cleavable sites. (b) cleaving into fragments said extension at cleavable sites in the presence of means for specifically cleaving said cleavable sites when said extension is hybridised with said template sequence, (c) dissociating said fragments, comprising a primary polynucleotide sequence, (d) hybridising said fragments with further said single stranded pattern polynucleotide, and repeating steps (a)-(d) above wherein steps (a)-(d) are conducted simultaneously or wholly or partially sequentially.

Dwg.0/6

ABEQ US 5273879 A UPAB: 940217

Kit for polynucleotide analysis by the amplification **method** comprises (a) a single-stranded DNA oligomer bonded at its 3' end to a single-stranded polynucleotide binding sequence that is complementary to a target sequence of about 12-1,000 nucleotides; such that the oligomer comprises about 3-1,000 oligonucleotide units, each contg. dATP, dTPP, dGTP and/or dCTP or their derivs. in the form of an identical oligonucleotide template sequences (about 8-100 nucleotides) and at least one restriction site when the template is hybridised to a complementary sequence; (b) deoxynucleoside triphosphates; (c) DNA-dependent DNA polymerase; and (d) restriction endonuclease that cleaves the above restriction site.

USE - The prods. facilitate the detection and identification of polynucleotides.

Dwg.1/6

L48 ANSWER 69 OF 69 COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 86-151265 [24] WPIDS
DNC C86-064654
TI Prodn. of single strand of nucleic acid on large scale - by using solid substrate carrying covalently linked complementary poly nucleotide and hybridising to oligo nucleotide etc..
DC B04 D16
IN BARNETT, T; CROTHERS, D; DATTAGUPTA, N; RAE, P

AU 8819285 A 890127 (8913)
JP 01060390 A 890307 (8915)
US 4994368 A 910219 (9110)
CA 1301672 C 920526 (9227)
EP 300796 B1 931020 (9342) EN 48 pp
R: AT BE CH DE ES FR GB IT LI NL SE
DE 3885027 G 931125 (9348)
US 5273879 A 931228 (9401) 19 pp
ES 2045127 T3 940116 (9407)

ADT EP 300796 A EP 88-306717 880721; JP 01060390 A JP 88-182780 880721; US 4994368 A US 87-76807 870723; CA 1301672 C CA 88-572634 880721; EP 300796 B1 EP 88-306717 880721; DE 3885027 G DE 88-3885027 880721, EP 88-306717 880721; US 5273879 A Div ex US 87-76807 870723, US 90-614180 901113; ES 2045127 T3 EP 88-306717 880721

FDT DE 3885027 G Based on EP 300796; US 5273879 A Div ex US 4994368; ES 2045127 T3 Based on EP 300796

PRAI US 87-76807 870723

AN 89-025945 [04] WPIDS

AB EP 300796 A UPAB: 930923

Prodn. of multiple copies of a prim. polynucleotide (PN) sequence located at the 3' end of a PN comprises (a) forming in the presence of nucleoside triphosphates and **template**-dependent PN **polymerase** an extension of a primary PN sequence hybridised with a template sequence of a single stranded pattern PN comprising 2 or more template sequences each contg. one or more cleavable sites, (b) cleaving into fragments the extension when it is hybridised with the template sequence, (c) dissociating the fragments, comprising a primary PN sequence, (d) hybridising the fragments with the single stranded pattern PN and repeating steps (a)-(d) which are conducted simultaneously or wholly or partially sequentially.

Also claimed is a compsn. comprising a single stranded DNA oligomer of 3-100 oligonucleotide units in tandem each consisting of an identical oligodeoxynucleotide template having 8-100 nucleotides and at least one restriction site, where the 3' end of the oligomer is bonded to the oligomer to form a ring.

Also claimed is a compsn. comprising a single stranded DNA oligomer bonded at its 3' end to a single stranded nucleic acid binding sequence consisting of at least 16 nucleotides, the oligomer consisting of 3-100 oligonucelotide units each consisting of an identical oligonucleotide template sequence having 8-100 nucleotides and at least one restriction site, where the oligomer is composed of nucleotides selected from 3 members of the gp. consisting of dA, dT, dG and dC and derivs.

USE - The method may be used to detect a PN analyte contg. a target PN sequence in a sample.

0/6

ABEQ US 4994368 A UPAB: 930923

Multiple copies of a prim polynucleotide (PN) sequence (S) located at the terminus of a PN are produced by (A) forming an extension of a prim PNS, in the presence of nucleoside triphosphate and **template** dependent polynucleotide **polymerase**, hybridised with a template sequence of a single stranded pattern PN

dimers induced, RNA uptake by cells, loss of activity by extracellular hydrolysis of RNA and accessibility of dimers once RNA is in the cell. Purine nucleotides, unless converted extracellularly into their nucleosides, are not normally taken up well by mammalian cells, and a preparation of methylene bis-adenylic acid would probably have to be converted into a derivative which is taken up more readily. This was possible in the case of cyclic AMP where several lipid soluble derivatives, notably the N6O2' dibutryl form, are more active than the parent compound, presumably because they enter cells more easily and are more resistant to intracellular hydrolysis by cAMP-phosphodiesterase. The dibutyrul derivative of cyclic AMP becomes active only after the cellular cleavage of the acyl group from the O2' position, but as the N6 acyl group is not removed by cellular enzymes it is thought that the N6-butyryl form is an active derivative.

L48 ANSWER 66 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 69:23004 BIOSIS
DN BR05:23004
TI OLIGO NUCLEOTIDES AND **POLY NUCLEOTIDES** AS TOOLS FOR BIOCHEMICAL STUDIES **SYNTHESIS METHODS** GENETIC ACTIVITY.
AU JACOB T M
SO J SCI IND RES (INDIA) 27 (8). 1968 316-325 CODEN: JSIRAC ISSN: 0022-4456
LA Unavailable

L48 ANSWER 67 OF 69 MEDLINE
AN 68098369 MEDLINE
TI A convenient **method** for the **preparation** of primer-dependent **polynucleotide** phosphorylase from Micrococcus lysodeikticus.
AU Klee C B; Singer M F
SO Biochem Biophys Res Commun, (1967 Nov 17) 29 (3) 356-61. Journal code: 9Y8. ISSN: 0006-291X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 6804

L48 ANSWER 68 OF 69 COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 89-025945 [04] WPIDS
DNC C89-011537
TI Amplification in polynucleotide assays - by extension using nucleoside tri phosphate(s) and **template**-dependent polynucleotide **polymerase**, cleavage and dissociation.
DC B04 D16
IN BECKER, M; GOODMAN, T; ROSE, S; ULLMAN, E F; GOODMAN, T C
PA (SYNT) SYNTEX USA INC; (SYNT) SYNTEX (USA)
CYC 16
PI EP 300796 A 890125 (8904)* EN 35 pp
R: AT BE CH DE ES FR GB IT LI NL SE

syntheses of oligoribonucleotides containing modified nucleosides offers a means of studying the role s of these modification by the use of relatively simple model compounds.

L48 ANSWER 63 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 76:234413 BIOSIS
DN BA62:64413
TI STEPWISE SYNTHESIS OF OLIGO NUCLEOTIDES PART 18 SYNTHESIS OF OLIGO RIBO NUCLEOTIDES BY COMBINATION OF DIFFERENT ENZYMES INVOLVED IN NUCLEIC METABOLISM.
AU ZHENODAROVA S M; KLYAGINA V P; SMOLYANINOVA O A; PONOMAREVA V M
SO BIOORG KHIM 1 (5). 1975 598-603. CODEN: BIKHD7
LA Unavailable
AB A **method** for the synthesis of oligoribonucleotides of definite sequence is porposed, based on the combined use of nucleolytic enzymes, i.e., RNAses with different substrate specificity and polynucleotide phosphorylases. One of the variants of this **method** was tested. RNAses A or T1 catalyzed synthesis of dinucleoside monophosphates .**GRAPHIC**. and the **synthesis** of trinucleoside diphosphates by **polynucleotide** phosphorylase [PNase] from Micrococcus lysodeikticus [Micrococcus luteus] .**GRAPHIC**. Dinucleoside monophosphates, trinucleoside diphosphates, tetranucleoside triphosphates, pentanucleoside tetraphosphates, hexanucleoside pentaphosphate and heptanucleoside hexaphosphates were hosphates, hexanucleoside pentaphosphate and heptanucleoside hexaphosphates were synthesized according to the above scheme.

L48 ANSWER 64 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 74:153051 BIOSIS
DN BA57:52751
TI A MODIFIED TRI ESTER **METHOD** FOR THE **SYNTHESIS** OF DEOXY RIBO **POLY NUCLEOTIDES**.
AU ITAKURA K; BAHL C P; KATAGIRI N; MICHNIEWICZ J J; WIGHTMAN R H; NARANG S A
SO CAN J CHEM 51 (21). 1973 3649-3651. CODEN: CJCHAG ISSN: 0008-4042
LA Unavailable

L48 ANSWER 65 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 76:179483 BIOSIS
DN BA62:9483
TI CHEMO THERAPY FOR AN ELECTIVE EFFECT ON MAMMALIAN TUMOR CELLS.
AU ALDERSON T
SO NAT NEW BIOL 244 (131). 1973 (RECD 1974) 3-6. CODEN: NNBYA7 ISSN: 0369-4887
LA Unavailable
AB These preliminary studies indicate the need for a thorough investigation into the biological effects of the methylene bis-purine ribonucleotides on other tumor screening systems, and on normal and tumor primary cell lines in culture. The crude **method** of treatment with **polynucleotide preparations** used here introduces a number of complicating features into the assessement of their real activity, such as the number of relevant

at 37-50 degrees in buffered aqueous solutions (pH 5.0-8.0) containing mercuric acetate. Proton magnetic resonance, elemental, electrophoretic, and chromatographic analyses have shown the products to be 5-mercuricytosine and 5-mercuriuracil derivatives, where the mercury atom is covalently bonded. Polynucleotides can be mercurated under similar conditions. Cytosine and uracil bases are modified in RNA while only cytosine residues in DNA are substituted. There is little, if any, reaction with adenine, thymine, or guanine bases. The rate of polymer mercuration is, unlike that of mononucleotides, markedly influenced by the ionic strength of the reaction mixture: the lower the ionic strength the faster the reaction rate. Pyrimidine residues in single- and double-stranded polymers react at essentially the same rate. Although most polynucleotides can be extensively mercurated at pH 7.0 in sodium or Trisacetate buffers, tRNA undergoes only limited substitution in Tris buffers. The mild reaction conditions give minimal single-strand breakage and, unlike direct iodination procedures, do not **produce** pyrimidine hydrates. Mercurated **polynucleotides** can be exploited in a variety of ways, particularly by crystallographic and electron microscopic **techniques**, as tools for studying polynucleotide structure.

L48 ANSWER 62 OF 69 MEDLINE
AN 75109252 MEDLINE
TI Stepwise enzymatic oligoribonucleotide synthesis including modified nucleotides.
AU Walker G C; Uhlenbeck O C
SO Biochemistry, (1975 Feb 25) 14 (4) 817-24.
Journal code: A0G. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7507
AB A **method** has been developed for the routine synthesis of 2'(3')-o-monoacyl ribonucleoside 5'-diphosphates for stepwise **synthesis** of oligoribonucleotides with Escherichia coli **polynucleotide** phosphorylase. The use of triethyl orthoisovalerate allows the facile preparation of 2'(3')-o-isovaleryl-UDP, -CDP, -ADP, -GDP, -IDP, -EPLISON-APD, eplison-CDP, and N6-isopentenyl-ADP. The synthesis of N6-isopentenyl-ADP from ADP by N1-alkylation and the Dimroth rearrangement to N6 is reported. The effects of several factors including the nature of the divalent cation, pH, SALT CONCENTRATION, AND TIME ON THE EFFICIENCY OF THE POLYNUCLEOTIDE PHPSPHORYLASE CATALYZED SINGLE ADDITIONS OF THE 2'(3')-O-ISOVALERYL RIBONUCLEOSIDE 5'-DIPHOSPHATES TO AN OLIGORIBONUCLEOTIDE PRIMER ARE REPORTED. The syntheses of many tetranucleoside triphosphates and two pentanucleoside tetraphosphates in yields of 20-75 per cent are reported. The 2'(3')-o-isovaleryl derivatives of IDP, eplison-ADP, eplison-CDP, and N6-isopentenyl-ADP were all accepted by polynucleotide phosphorylase as substrates for the monoaddition reaction. The extension of the **method** to include the

CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7512
AB A number of synthetic **methods** for the preparation of the 2-O-(alpha-methoxyethyl) derivatives of the 5-diphosphates of adenosine, cytidine, guanosine, and uridine have been studied in order to provide nucleotide substrates that can be applied to the **synthesis** of specific oligoribonucleotides using **polynucleotide** phosphorylase. The reaction of nucleoside 5-diphosphates with methyl vinyl ether for a limited time produces low yields of the corresponding 2-O-(alpha-methoxyethyl) derivatives because the rate of methoxyethylation of the 3-hydroxyl groups. A study of the rates of acidic hydrolysis of alpha-methoxyethyl groups in the 2 and 3 positions of nucleosides and nucleotides has been made, and the results obtained form the basis of a more efficient **method** for the synthesis of the blocked nucleoside diphosphates. The **method** involves the reaction of nucleoside 5-diphosphates with methyl vinyl ether to give the corresponding 2,3-di-O-(alpha-methoxyethyl)nucleoside 5-diphosphates, and exploits the fact that, in the acidic hydrolysis of these derivatives, the rate of removal of the 3-methoxyethyl group is about twice that of the group in the 2 position. Alternative syntheses were based on the phosphorylation of methoxyethylated nucleosides and nucleotides. The derivatives, 2-O- and 2,3-di-O-(alpha-methoxyethyl)uridine, were prepared by the methoxyethylation of 3,5-di-O-acetyluridine and 5-O-acetyluridine followed by removal of the acetyl groups. The corresponding guanosine derivatives were made by the synthetic routes: (i) guanosine leads to O-2,O-3,O-5,N-2-tetrabenzoylguanosine leads to 2-N-benzoylguanosine leads to O3-acetyl-N-2,O5-dibenzoylguanosine leads to 2-O-(alpha-methoxyethyl)guanosine, and (ii) 2,3-O-isopropylideneguanosine leads to N-2,O5-diacetyl-2,3-O-isopropylideneguanosine leads to N-2,O-5-diacetylguanosine leads to 2,3-di-O-(alpha-methoxyethyl)guanosine. These methoxyethylated nucleosides were converted to the corresponding 5-phosphates by reaction with cyanoethyl phosphate and dicyclohexylcarbodiimide, and then to the corresponding 5-diphosphates by subsequent reaction with 1,1-carbonyldiimidazole and inorganic phosphate.

L48 ANSWER 61 OF 69 MEDLINE
AN 75183948 MEDLINE
TI Direct covalent mercuration of nucleotides and polynucleotides.
AU Dale R M; Martin E; Livingston D C; Ward D C
SO Biochemistry, (1975 Jun 3) 14 (11) 2447-57.
Journal code: A0G. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7511
AB Nucleotides of cytosine and uracil are readily mercurated by heating

tetranucleotide was further condensed with the dinucleotides IVa and IVb to yield a hexanucleotide and an octanucleotide.

L48 ANSWER 58 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 76:119493 BIOSIS
DN BA61:19493
TI PROGRESS IN THE CHEMISTRY OF ORGANIC NATURAL PRODUCTS VOL 32.
AU HERZ W; GRISEBACH H; KIRBY G W
SO FORTSCHR CHEM ORG NATURST 1975 560. CODEN: FCONAA ISSN: 0071-7886
DT Book
LA Unavailable

L48 ANSWER 59 OF 69 MEDLINE
AN 75189494 MEDLINE
TI The synthesis of a DNA duplex corresponding to the icosanucleotide sequence at the 5' end of messenger RNA from the gene N of bacteriophage lambda.
AU Agarwal K L; Berlin Y A; Kleid D G; Smirnov V D; Khorana H G
SO J Biol Chem, (1975 Jul 25) 250 (14) 5563-73.
Journal code: HIV. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7511
AB In connection with work on the nucleotide sequence of the promoter for the gene N of bacteriophage lambda as well as a study of the mechanism of transcription, a 20-unit long DNA duplex corresponding to the known sequence at the 5' end of the above gene transcript has been synthesized. For synthesis, the required duplex was divided into the following deoxyribooligonucleotides: a) the dodecanucleotide, d-A-T-C-A-G-C-A-G-G-A-C-G (II); b) the octanucleotide, d-C-A-C-T-G-A-C-C- (IV); c) the hexanucleotide, d-G-C-T-G-A-rU (I); and d) dodecanucleotide, d-T-C-A-G-T-G-C-G-T-C-C-T (III). All of the four oligonucleotides were chemically synthesized and characterized by extensive chromatographic and fingerprinting **methods** (after labeling the 5' ends with[32P]phosphate group). Longer polynucleotides (an icosa- and an octadecanucleotide) were **prepared** by **polynucleotide** ligase-catalyzed joining of segments I and III and by joining segments II and IV. The use of the octadecanucleotide, d-T-C-A-G-T-G-C-G-T-C-C-T-G-C-T-G-A-rU, in work on the sequence analysis of the promoter is described in the accompanying paper. The octadecanucleotide and icosanucleotide were hybridized together to give the double-stranded duplex.

L48 ANSWER 60 OF 69 MEDLINE
AN 75205590 MEDLINE
TI "Single Addition" substrates for the synthesis of specific oligoribonucleotides with polynucleotide phosphorylase. Synthesis of 2'-(alpha-methoxyethy) nucleoside 5'-diphosphates.
AU Bennett G N; Gilham P T
SO Biochemistry, (1975 Jul 15) 14 (14) 3152-8.
Journal code: A0G. ISSN: 0006-2960.

self condensation offered by the methoxyethyl group in this system allows the specific joining of donor and acceptor oligonucleotides in reaction mixtures containing equimolar concentrations of the two species. Thus, the enzyme, together with ATP, converts equimolar quantities of A-A2-A and pA-A2-A(MeOEt) to A-A6-A(MeOEt) in 55% yield, while a similar reaction with A-A2-A and pU-U2-U(MeOEt) results in a 40% yield of A-A3-U3-U(MeOEt). The intermediate in these ligations is a disubstituted pyrophosphate composed of the donor molecule and the adenylate moiety deriving from ATP. In the case of the intermediate arising from the blocked adenosine tetranucleotide, the assigned structure, A5'pp5'A-A2-A(MeOEt), has been confirmed by chemical synthesis. The pyrophosphate derivative is able to participate in joining reactions in the absence of ATP. These observations constitute an efficient approach to the **synthesis** of larger **polynucleotides** from a specific series of oligonucleotide blocks since (i), the methoxyethyl group can be easily introduced into each oligonucleotide using the single addition reaction catalyzed by polynucleotide phosphorylase in the presence of a 2'-O-(alpha-methoxyethyl)nucleoside 5'-diphosphate, and (ii), the blocking group may be readily removed under mild conditions after each successive ligation reaction. Two other octanucleotides, I-I2-A-U3-U and U-U2-C-I3-A, have also been synthesized by this **method**, and these molecules correspond (with I substituting for G) to sequences appearing near the 3' terminus of the 6S RNA transcribed from phage lambda DNA. The terminal 3'-phosphate group serves equally well as a blocking group for specific ligation reactions in that the ligase converts equimolar amounts of A-A2-A and pA-A2-Ap to A-A6-Ap in 50% yield.

L48 ANSWER 57 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 77:147718 BIOSIS
DN BA63:42582
TI **POLY NUCLEOTIDES** PART 29 **SYNTHESIS** OF DEOXY RIBO OLIGO NUCLEOTIDE BLOCKS BY AN EXTRACTION **METHOD**.
AU OHTSUKA E; MORIOKA S; IKEHARA M
SO CHEM PHARM BULL (TOKYO) 24 (4). 1976 560-564. CODEN: CPBTAL ISSN: 0009-2363
LA Unavailable
AB 5'-Phosphoryl-N-benzoyldeoxyadenylyl-(3',5')-N-anisoyl-3'-O-acetyldeoxycytidine (IVa) and 5'-phosphoryl-N-isobutyryldeoxyguanylyl-(3',5')-N-anisoyl-3'-O-acetyldeoxycytidine (IVb) were synthesized by condensation of 5'-O-(N-trityl-p-aminophenyl) phosphoryl-N-benzoyldeoxyadenosine or 5'-O-(N-trityl-p-aminophenyl)phosphoryl-N-isobutyryldeoxyguanosine with N-anisoyldeoxycytidine 5'-phosphate using triidopropylbenzenesulfonyl chloride (TPS). Some intermediates were isolated by extraction with organic solvents, and the N-trityl-p-aminophenyl group was removed by oxidative hydrolysis. The dinucleotides (IV) were obtained without ion-exchange chromatography in yields of 50-60% and used for synthesis of the oligonucleotides. The tetranucleotide (VI) was synthesized by condensing a terminal tritylated dimer with IVa using TPS and was also isolated from the starting materials by the extraction method in a yield of 49%. A

AN 80:97748 BIOSIS
DN BR19:35246
TI **SYNTHESIS** OF OLIGO NUCLEOTIDES AND **POLY NUCLEOTIDES** 20. **SYNTHESIS** OF 2 DODECA DEOXY NUCLEOTIDES BY THE PHOSPHO TRI ESTER **METHOD.**
AU DOBRYNIN V N; BOLDYREVA E F; BYSTROV N S; SEVERTSOVA I V; CHERNOV V K; KOLOSOV M N
CS M. M. SHEMYAKIN INST. BIOORG. CHEM., ACAD. SCI. USSR, MOSCOW, USSR.
SO SOV J BIOORG CHEM (ENGL TRANSL BIOORG KHIM) 4 (4). 1978 (RECD. 1979). 382-390. CODEN: SJBCD5 ISSN: 0360-4497
LA English

L48 ANSWER 55 OF 69 MEDLINE
AN 78011708 MEDLINE
TI A rapid and convenient synthesis of poly-thymidylic acid by the modified triester approach.
AU Sood A K; Narang S A
SO Nucleic Acids Res, (1977 Aug) 4 (8) 2757-65.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7801
AB By using anhydrous triethylamine-pyridine to selectively remove the cyanoethyl group from the fully protected oligonucleotide, a substantial improvement has been achieved in yields and the rates of condensation by the modified triester approach from the 5' leads to 3' end. The unreacted oligonucleotide containing the 5'-hydroxy group was removed by treatment with bis (triazolyl)-p-chlorophenyl phosphate after each condensation in situ. These modifications, as exemplified by the synthesis of fully protected T12, T18, T24 and T38 in 80%, 77%, 70% and 50% yields respectively, should allow the ready **synthesis** of **polynucleotides** of even longer chain lengths by purely chemical **methods.**

L48 ANSWER 56 OF 69 MEDLINE
AN 77078512 MEDLINE
TI The use of terminal blocking groups for the specific joining of oligonucleotides in RNA ligase reactions containing equimolar concentrations of acceptor and donor molecules.
AU Sninsky J J; Last J A; Gilham P T
SO Nucleic Acids Res, (1976 Nov) 3 (11) 3157-66.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7704
AB Under the conditions that RNA ligase converts the tetranucleotide, pA-A2-A, to larger polynucleotides, no such polymerization can be detected with the derivative, pA-A2-A(MeOEt), that possesses a terminal 2'-O-(alpha-methoxyethyl) group. The protection against

L48 ANSWER 52 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 15
AN 79:178407 BIOSIS
DN BA67:58407
TI WELL DEFINED INSOLUBLE PRIMERS FOR THE ENZYMATIC SYNTHESIS OF OLIGO NUCLEOTIDES AND POLY NUCLEOTIDES.
AU KOESTER H; ALBERSMEYER K; SKROCH D
CS INST. ORG. CHEM. BIOCHEM., UNIV. HAMB., MARTIN-LUTHER-KING-PL. 6, D-2000 HAMBURG 13, W. GER.
SO HOPPE-SEYLER'S Z PHYSIOL CHEM 359 (11). 1978. 1579-1590. CODEN: HSZPAZ ISSN: 0018-4888
LA English
AB Two **methods** are described by which primer molecules like UpU and oligodeoxythymidylates can be coupled with high efficiency to an insoluble polymer, like hydroxypropylated Sephadex G-50, by 1 covalent linkage. In 1 procedure aliphatic dicarboxylic dichlorides (e.g., adipoyl dichloride) are used to serve as spacers of variable length and for anchoring the primer molecule UpU. The other **method** involves pU as an anchor for (pdT)3 and (pdT)6, which are coupled to the polymer using condensation reactions with 2,4,6-triisopropylphenylsulfonyl chloride. In both cases the homogeneous primer molecules are bound specifically to the polymer. The insoluble primers are tested for their priming efficiency using polynucleotide nucleotidyltransferase from Micrococcus luteus and DNA nucleotidylexotransferase from calf thymus. The primers and **synthesized polynucleotides** can be cleaved from the polymer under conditions which do not damage the ribo- and deoxyribopolynucleotides.

L48 ANSWER 53 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 78:256071 BIOSIS
DN BA66:68568
TI **SYNTHESIS** OF OLIGO NUCLEOTIDES AND **POLY NUCLEOTIDES** PART 20 THE **SYNTHESIS** OF DODECA DEOXY NUCLEOTIDES BY THE PHOSPHO TRI ESTER **METHOD**.
AU DOBRYNIN V N; BOLDYREVA E F; BYSTROV N S; SEVERTSOVA I V; CHERNOV B K; KOLOSOV M N
CS M.M. SHEMYAKIN INST. BIOORG. CHEM., ACAD. SCI. USSR, MOSCOW, USSR.
SO BIOORG KHIM 4 (4). 1978 523-534. CODEN: BIKHD7
LA Russian
AB The title polynucleotides, constituents of the A2 and A3 promotes of T7 bacteriophage DNA, were synthesized by the phosphotriester approach of Narang et al. Starting compounds were completely N, O, P-protected 3'-nucleotides prepared by phosphorylation of appropriate N-acyl-5'-dimethoxytrityl nucleosides with p-chlorophenyl phosphobistriazolidate in the presence of pyridine which was found to significantly accelerate the reaction. For internucleotide condensations p-nitrobenzenesulfonyltriazolide was used as a coupling reagent. This compound was shown by 31P-NMR to transform chlorophenyl nucleoside-3'-phosphates into corresponding pyrophosphates and triazolides, which are probably the active phosphorylating intermediates in these condensations.

L48 ANSWER 54 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS

CS FAC. PHARM. SCI., OSAKA UNIV. SUITA, OSAKA 565, JPN.
SO BIOCHIM BIOPHYS ACTA 565 (1). 1979. 192-198. CODEN: BBACAQ ISSN: 0006-3002
LA English
AB Two hexanucleotides A-U-G-U-G-A and C-A-A-U-U-G were synthesized from chemically synthesized trimers C-A-A and A-U-G by addition of 2'-O-(o-nitrobenzyl)nucleoside diphosphates using polynucleotide phosphorylase isolated from either Escherichia coli or Micrococcus luteus. In each reaction the preference of the enzyme was tested. The o-nitrobenzyl group was removed after addition of the mononucleotide and the deblocked product was isolated by chromatography on DEAE-Sephadex in high yields.

L48 ANSWER 50 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 79:243114 BIOSIS
DN BA68:45618
TI THE CHEMICAL SYNTHESIS OF OLIGO NUCLEOTIDES AND POLY NUCLEOTIDES BY THE PHOSPHO TRI ESTER APPROACH.
AU REESE C B
CS DEP. CHEM., KING'S COLL., STRAND, LONDON WC2R 2LS, ENGL., UK.
SO TETRAHEDRON 34 (21). 1978. 3143-3180. CODEN: TETRAB ISSN: 0040-4020
LA English
AB The phosphotriester **method** of **synthesis** of oligo- and **poly-nucleotides** has **produced** satisfactory yields. **Preparation** of nucleoside building blocks and recent developments in phosphorylation are discussed.

L48 ANSWER 51 OF 69 MEDLINE
AN 78225519 MEDLINE
TI Simplified methods for large scale enzymatic synthesis of oligoribonucleotides.
AU Shum B W; Crothers D M
SO Nucleic Acids Res, (1978 Jul) 5 (7) 2297-311. Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7811
AB We report simplified **methods** for large scale enzymatic **synthesis** of oligoribonucleotides using **polynucleotide** phosphorylase. The main features of the **method** are use of RPC-5 chromatography, including chromatography at two pH values to deal with the problem of primer phosphorolysis, rapid dialysis for large scale desalting, simplified **methods** for enzyme removal, and high resolution 1H and 31P NMR for product identification and demonstration of purity. The capacity of the **method** is adequate to allow beginning with grams of material in the first polymerization step, so that product yields of several milligrams, sufficient for many physical studies, are possible after as many as three separate polymerization reactions.

trinucleotides, tetranucleotides and hexanucleotides of defined sequence bearing different bases at the 3' terminus was devised. The **method** involved phosphorylation of blocked oligoribonucleotides synthesized by a phosphotriester **method**. The deblocked oligoribonucleotides were phosphorylated at the 5' end with [phage] T4-induced **polynucleotide** kinase. The **products** of this kinase reaction served as donors in RNA ligase reactions. The [32P]pC-A-U-A-U-Gp, [32P]pA-U-Gp, [32P]pU-A-A, [32P]pA-G-G-Ap, [32P]pC-U-U-Ap and [32P]pU-C-C-Up donors were used to synthesize A-G-G-A[32P]pC-A-U-A-Gp, U-C-C-U[32P]pC-A-U-A-U-Gp, U-A-A[32P]pA-U-G, A-U-G[32P]pU-A-A, U-A-A-G[32P]pA-G-G-Ap, U-C-C-U[32P]pC-U-U-Ap and A-U-U-C[32P]pU-C-C-Up indicating that the **method** functions with all based. A-U-Gp, pA-U-Gp and pC-A-U-A-U-Gp were isolated free of reactants and, along with pA-U-G, were all shown to promote the formation of translational initiation complexes. A-G-G-A[32P]pC-A-U-A-U-Gp, which corresponds to the 5'-terminal portion of the intracistronic region of the maturation protein of bacteriophage Q.beta., bound more efficiently to Escherichia coli ribosomes than the U-C-C-U-[32P]pC-A-U-A-U-Gp, [32P]pC-A-U-A-U-Gp, [32P]pA-U-G-U-A-A or [32P]pU-A-A-A-U-G controls. The conetne and number of residues at the 5' terminus attached to A-U-G affect binding of oligonucleotides to ribosomes; purine nucleosides appear to be more effective than pyrimidine nucleosides in this regard.

L48 ANSWER 48 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 79:271071 BIOSIS
DN BA68:73575
TI SYNTHESIS OF THE STRUCTURAL GENE FOR LEUCINE ENKEPHALIN.
AU EFIMOV V A; CHAKHMAKHCHEVA O G
CS M.M. SHEMYAKIN INST. BIOORG. CHEM., ACAD. SCI. USSR, MOSCOW, USSR.
SO BIOORG KHIM 5 (2). 1979. 305-307. CODEN: BIKHD7
LA Russian
AB A double-stranded deoxyribonucleotide, representing the structural gene for Leu-enkephalin, was synthesized by a combination of chemical and enzymatic **methods**. Besides the 5 codons of Leu-enkephalin, a methionine codon preceding the normal NH2-terminal amino acid of this peptide and 1 nonsense codon after its COOH-terminal codon were built into the nucleotide sequence. To facilitate the insertion into plasmid DNA, the 5'-ends of this fragment have single-stranded cohesive termini for the Eco RI and Bam HI restriction endonucleases. This **polynucleotide** was **prepared** from the 4 chemically synthesized 13-nucleotide long segments by the action of T4 DNA ligase.

L48 ANSWER 49 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 80:166467 BIOSIS
DN BA69:41463
TI **POLY NUCLEOTIDES** 58. A **METHOD** FOR THE **SYNTHESIS** OF OLIGO NUCLEOTIDE BY SINGLE ADDITION OF 2'-O-O NITROBENZYL NUCLEOSIDE 5' DI PHOSPHATES USING POLY NUCLEOTIDE PHOSPHORYLASE.
AU OHTSUKA E; TANAKA S; HAYASHI M; IKEHARA M

AN 80:127577 BIOSIS
DN BA69:2573
TI AN INFORMATION THEORY OF THE GENETIC CODE.
AU TSUKAMOTO Y
CS DEP. ANAT., HYOGO COLL. MED., 1-1 MUKOGAWACHO, NISHINOMIYA, HYOGO, JPN.
SO J THEOR BIOL 78 (4). 1979. 451-498. CODEN: JTBIAP ISSN: 0022-5193
LA English
AB An information theory of the genetic code is given, which deals with the process by which template codes (nucleotides or codons) choose substrate codes (nucleotides or anti-codons) in accordance with the base-paring rules in the chain elongation phase of **polynucleotide** or polypeptide **synthesis**. A definite period of recognition time (.tau.) required for a template code to discriminate a substrate code is proposed, and an experimental **method** for determining the time is suggested. A substrate word is defined to be the sequence of substrate codes which have appeared at a recognition site in turn before a substrate code complementary to a template code 1st appears, and the mean length of substrate words (F) is derived from the mole fractions of template codes and substrate codes. The chain elongation rate is greatest when the mole fractions of template codes is proportional to the square of those of substrate codes to minimize the mean recognition time per word (F.tau.). The uncertainty of a template (G) and the uncertainty of a medium (M), respectively, are derived from the minimum of the function F. The amount of genetic information contained in a template is measured by the function G. The unit of the amount of genetic information is termed "cit". The function M, the ratio of the number of all binary collisions to the number of homogeneous binary collisions in a mixture of different molecules, may be the new other entropy which represents informational properties of the mixture not represented by thermodynamic entropy of mixing. Both functions (G and M) have maxima when all random variables are equal and they are multiplicative in nature in contrast to entropy which is additive. The multiplicativity of the function G may contribute to the enormous informational capacity of genes.

L48 ANSWER 47 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 80:161943 BIOSIS
DN BA69:36939
TI SYNTHESIS OF BIOLOGICALLY ACTIVE PORTIONS OF AN INTER CISTRONIC REGION BY USE OF A NEW 3' PHOSPHATE INCORPORATION METHOD TO PROTECT 3' HYDROXYL AND THEIR BINDING TO RIBOSOMES.
AU NEILSON T; GREGOIRE R J; FRASER A R; KOFOID E C; GANOZA M C
CS DEP. BIOCHEM., HEALTH SCI. CENT., MCMASTER UNIV., 1200 MAIN ST. W., HAMILTON, ONT. L8S 4J9, CAN.
SO EUR J BIOCHEM 99 (3). 1979. 429-438. CODEN: EJBCAI ISSN: 0014-2956
LA English
AB To examine the influence of bases contiguous to a starter codon, a rapid means of assembling biologically active regions corresponding to portions, or to analogues of portions of intercistronic regions is desirable. To do this, a chemical **method** for the specific insertion of 3'-monophosphate groups on to chemically synthesized

differing in the size of nontranscribed region, was performed. In this synthesis, a new chemical-enzymatic **method** was used which involves covalent binding of the synthetic oligonucleotide segments (in their sum total comprising 1 strand of the final fragment) on the single-stranded native fd DNA[(+)-strand] on a template in the presence of [phage] T4 DNA ligase, followed by cleavage of the resultant duplex by the action of S1 nuclease.

L48 ANSWER 44 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 80:242277 BIOSIS
DN BA70:34773
TI SYNTHESIS OF SPIN LABELED OLIGO RIBO NUCLEOTIDES.
AU ZHENODAROVA S M; KLYAGINA V P; POROTIKOVA V A; ZHDANOV R I
CS INST. BIOL. PHYS., ACAD. SCI. USSR, AKADEMGORODOK, PUSHCHINO, USSR.
SO BIOORG KHIM 5 (9). 1979. 1341-1345. CODEN: BIKHD7
LA Russian
AB Adenosine and cytosine 2',3'-cyclic phosphates containing a spin label, 1-oxyl-2,2,5,5-tetramethyl-3-carboxypyrroline, may serve as substrates for various RNases [Penicillum brevicompactum RNase, P. chrysogenum RNase and micrococcus luteus **polynucleotide** phosphorylase] in hydrolysis and **synthesis** conditions. The applicability of enzymatic **methods** is demonstrated for preparing the oligoribonucleotides bearing the spin labels in different positions. The dinucleoside monophosphates R4CpC and GpR4C are synthesized, the latter being used for preparing trinucleoside diphosphate GpR4CpU.

L48 ANSWER 45 OF 69 MEDLINE
AN 79244096 MEDLINE
TI [Methods for the detection of antibodies to native (double stranded) DNA (author's transl)].
Methoden zur Bestimmung von Antikorpern gegen native (doppelstrangige) DNS.
AU Mitrou P S; Drahovsky D; Mitrou G; Borck W
SO Med Klin, (1979 May 25) 74 (21) 813-9.
Journal code: M4E. ISSN: 0025-8458.
CY GERMANY, WEST: Germany, Federal Republic of
DT Journal; Article; (JOURNAL ARTICLE)
LA German
FS Priority Journals
EM 7912
AB Three different **methods** adequate for routine work, i.e. hemagglutination, counterimmunoelectrophoresis and radioimmunoassay, were used in the past in our laboratory to detect antibodies to native (double stranded) DNA. There was a high incidence of false positive or false negative results by counterimmunoelectrophoresis. Hemagglutination reaction was less sensitive in detecting anti-nDNA than was radioimmunoassay. Natural DNA **preparations** and a synthetic **polynucleotide** (3H-dAT) were used as antigenic substrates in radioimmunoassay providing well correlating binding values.

L48 ANSWER 46 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS

high performance liquid chromatography on Permaphase AAX.

L48 ANSWER 41 OF 69 MEDLINE
AN 81246870 MEDLINE
TI New chemical **methods** for **synthesizing** **polynucleotides.**
AU Caruthers M H; Beaucage S L; Efcavitch J W; Fisher E F; Matteucci M D; Stabinsky Y
NC GM21120
GM25680
1 KO4 GM00076
+
SO Nucleic Acids Symp Ser, (1980) (7) 215-23.
Journal code: O8N.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8111

L48 ANSWER 42 OF 69 MEDLINE
AN 81246868 MEDLINE
TI Non-stepwise **methods** in the **preparation** of building blocks for **polynucleotide synthesis.**
AU Seliger H; Haas B; Holupirek M; Knable T; Todling G; Philipp M
SO Nucleic Acids Symp Ser, (1980) (7) 191-202.
Journal code: O8N.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8111
AB Oligonucleotide fragments of the general sequence ABn, BnC and ABnC as building units for polynucleotide synthesis can be obtained by three types of reactions, namely the sequence-specific co-condensation of nucleic acid constituents, the sequence-specific degradation of copolymers and the limited addition of nucleotides to primers. Examples for these reactions are described and the scope and application of the approach discussed.

L48 ANSWER 43 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 80:258123 BIOSIS
DN BA70:50619
TI SYNTHESIS OF A PROMOTER REGION OF BACTERIO PHAGE FD DNA 2. THE CHEMICAL ENZYMATIC SYNTHESIS OF THE UNMODIFIED PROMOTER WITH DNA LIGASE AND NUCLEASE S-1.
AU OVCHINNIKOV YU A; EFIMOV V A; CHAKHMAKHCHEVA O G
CS M.M. SHEMYAKIN INST. BIOORG. CHEM., ACAD. SCI. USSR, MOSCOW, USSR.
SO BIOORG KHIM 5 (12). 1979 (RECD. 1980). 1782-1792. CODEN: BIKHD7
LA Russian
AB The **synthesis** of several double-stranded **polynucleotides** containing from 45-86 base-pairs, which represent the variants of the G2 promoter region of phage fd DNA

LA English
AB A general procedure is described for introducing fluorescent labels into polynucleotides. The **method** utilizes the bisulfite-catalyzed transamination reaction of cytosine. Starting with poly(ribocytidylic acid), polynucleotides containing various proportions of uracil, cytosine, and cytosine attached to a fluorescent label (nitrobenzofurazan) were **prepared**. These fluorescent **polynucleotides** bind both 30S and 70S ribosomes from Escherichia coli; a large fluorescence enhancement is observed (50-100%). Competition experiments demonstrate that the fluorescent label weakens the polynucleotide binding by less than a factor of 2. Ribosomal 30S subunits which have been depleted of protein S1 (a protein probably involved in mRNA binding) bind the fluorescent polymers, but do not alter the label fluorescence. Purified S1 itself binds the modified polynucleotides with a similar fluorescence enhancement as that of the 30S subunits. S1 is probably the only ribosomal component that interacts with the fluorescent label. Applications of the labeling procedure to studies of synthetic and natural mRNA binding to ribosomes are discussed. A survey of the optical properties of the labeled polynucleotides shows that the label fluorescence at some wavelengths is very sensitive to protonation and base-pairing interactions of the cytosine base. A single strand specific **polynucleotide** binding protein (the gene 32 **product** of bacteriophage T4) also induces significant fluorescence changes in the attached label. These properties suggest applications of this labeling procedure to studies of polynucleotide conformations and polynucleotide-protein interactions.

L48 ANSWER 40 OF 69 MEDLINE
AN 81246876 MEDLINE
TI Solid-phase **synthesis** of **polynucleotides**: V. **Synthesis** of oligodeoxyribonucleotides by the phosphomonotriazolide **method**.
AU Miyoshi K; Itakura K
NC GM24393
CA16434
SO Nucleic Acids Symp Ser, (1980) (7) 281-91.
Journal code: O8N.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8111
AB Synthesis of two oligodeoxyribonucleotides of defined sequences, an undecamer [d(TGCACCATTCT)] and a dodecamer [d(TGGAGCCACTAT)], and tetradecathymidylic acid was described by a simple solid-phase method on a polystyrene resin. The synthesis was performed by the stepwise addition of deoxynucleoside 3'-phosphomonotriazolide to the resin, in the presence of a nucleophilic catalyst, 4-dimethylaminopyridine or N-methylimidazole. Quantitative coupling yield was consistently obtained for each cycle and the desired product was a major peak in the analysis of the final reaction by

AU Miyoshi K; Huang T; Itakura K
NC GM24393
CA16434
SO Nucleic Acids Res, (1980 Nov 25) 8 (22) 5491-505.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8106
AB Preparation of the three hexadecanucleotides, dGpTpApTpCpApCpGpApGpGpCpCpCpTpT, dCpGpApCpGpApGpCpGpTpGpApCpApCpC and cTpGpCpCpGpGpCpCpApCpGpApTpGpCpG, is described by a rapid and simple solid-phase method on polyacrylamide supports. The synthesis were performed by the extension of the method described in the previous paper using di and trinucleotides of defined sequences as an incoming 3'-phosphodiester unit. Although the coupling yields to form phosphotriester bonds are slightly lower than those for the homothymidylic acid series, pure polydeoxyribonucleotides of defined sequences can be synthesized without any major difficulty.

L48 ANSWER 38 OF 69 MEDLINE
AN 81124277 MEDLINE
TI Solid-phase **synthesis** of **polynucleotides**. II. **Synthesis** of polythymidylic acids by the block coupling phosphotriester **method**.
AU Miyoshi K; Miyake T; Hozumi T; Itakura K
NC GM24393
CA16434
SO Nucleic Acids Res, (1980 Nov 25) 8 (22) 5473-89.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8106
AB Synthesis of two oligothymidylic acids, tridecamer and nonadecamer, is described by a rapid and simple solid-phase method on two kinds of polyacrylamide supports derivatized from commercially available Enzacryl Gel K-2. The syntheses were performed by the phosphotriester method using di- and tri-thymidylic acid blocks as the incoming 3'-phosphodiester component. High coupling yields were consistently obtained and the final product was isolated very easily by high performance liquid chromatography on Permaphase AAX.

L48 ANSWER 39 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 80:256009 BIOSIS
DN BA70:48505
TI A METHOD FOR LINKING FLUORESCENT LABELS TO POLY NUCLEOTIDES APPLICATION TO STUDIES OF RIBOSOME RNA INTERACTIONS.
AU DRAPER D E; GOLD L
CS DEP. MOL. CELL. DEV. BIOL., UNIV. COLO., BOULDER, COLO. 80309, USA.
SO BIOCHEMISTRY 19 (9). 1980. 1774-1781. CODEN: BICHAW ISSN: 0006-2960

polynucleotides according to the triester **method**, and being of low volatility and low thermal stability can conveniently be identified and characterized by field desorption mass spectrometry in off-line mode. The use of HPLC **techniques** for analytical and preparative separations of larger oligonucleotide fragments is also demonstrated.

L48 ANSWER 35 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 82:191337 BIOSIS
DN BA73:51321
TI PRIMER DEPENDENT SYNTHESIS OF OLIGO RIBO NUCLEOTIDES WITH POLY NUCLEOTIDE PHOSPHORYLASE FROM ESCHERICHIA-COLI.
AU RENKHOF R F; SHERIN' L A; MIKELSONE L KH; GREN E YA
CS INST. ORG. SYNTH., ACAD. SCI. LATV. SSR, RIGA, USSR.
SO BIOORG KHIM 7 (2). 1981. 228-235. CODEN: BIKHD7
LA Russian
AB The conditions for primer-dependent **synthesis** of oligoribonucleotides using E. coli **polynucleotide** phosphorylase of a low degree of purification were studied. Various oligoribonucleotides 2-6 nucleotides in length were used as primers with 4 natural nucleoside 5'-diphosphates. UpUpUpG and ApApApApUpG, structural elements of the ribosomal binding sites of phage RNA, were synthesized [using the enzymatic **method**].

L48 ANSWER 36 OF 69 MEDLINE
AN 81124279 MEDLINE
TI Solid-phase **synthesis** of **polynucleotides**. IV. Usage of polystyrene resins for the synthesis of polydeoxyribonucleotides by the phosphostriester **method**.
AU Miyoshi K; Arentzen R; Huang T; Itakura K
NC GM24393
CA16434
SO Nucleic Acids Res, (1980 Nov 25) 8 (22) 5507-17. Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8106
AB Contrary to the expectation, the Merrifield polystyrene resin, 2% cross-linked by divinylbenzene, is as efficient as the polyacrylmorpholide resin for the synthesis of polydeoxyribonucleotides using a phosphotriester method. On the Merrifield resin, the tetradecamer, dTpCpGpTpCpApApCpTpGpGpCpTpT, and the hexadecamer, dCpCpApGpTpCpApCpGpApCpGpTpTpGpT, were synthesized by the phosphotriester method using di and trinucleotide blocks as coupling units.

L48 ANSWER 37 OF 69 MEDLINE
AN 81124278 MEDLINE
TI Solid-phase **synthesis** of **polynucleotides**. III. **Synthesis** of **polynucleotides** with defined sequences by the block coupling phosphotriester **method**.

monophosphates FpA and Fp(lin-benzo-A) are described. The foreshortened analog was protected as its 2-(methoxytetrahydropyranyl)-5-(tert-butyldiphenylsilyl) derivative, while 5'-AMP and lin-benzo-AMP were protected by a new and easy **method** as the corresponding 2',3'-di-O-(tert-butyldimethylsilyl) nucleotides. Condensation of the fully protected F and 5'-monophosphate moieties with DCC [dicyclohexylcarbodiimide] provided the desired (3 .fwdarw. 5')-linked nucleotides, which, on treatment with phosphodiesterase I, were hydrolyzed back to F and the corresponding 5'-monophosphate.

L48 ANSWER 33 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 83:327688 BIOSIS
DN BA76:85180
TI SOLID PHASE **SYNTHESIS** OF OLIGO NUCLEOTIDES AND **POLY NUCLEOTIDES** 2. SOLID PHASE **SYNTHESIS** OF HEPTADECA DEOXY RIBO NUCLEOTIDE TCATTCCTTACTCTTCA BY PHOSPHO TRI ESTER **METHOD** USING PROTECTED 5' NUCLEOTIDES.
AU AMIRKHANOV N V; RIVKIN M I; KUMAREV V P
CS INST. CYTOL. GENET., SIB. DEP., ACAD. SCI. USSR, NOVOSIBIRSK, USSR.
SO BIOORG KHIM 8 (7). 1982. 1008-1010. CODEN: BIKHD7
LA Russian
AB Solid phase synthesis of oligodeoxynucleotides by a modified phosphotriester approach using commercial protected 5'-nucleotides ((ClPh) pN(Lev)) [ClPh = chlorophenyl; Lev = levulinate] was investigated. TCATTCCTTACTCTTCA was synthesized by attachment of corresponding dinucleotide blocks (ClPh)pN(ClPh)pN(Lev) to thymidylate residue bound to polymeric support through its 5'-hydroxyl group. The yield of heptadecanucleotide was 1.8%. Each elongation step consists of coupling the 3'-hydroxyl group of the polymer-bound nucleoside component and the 5'-phosphodiester grouping of the nucleotide component in solution using coupling reagent; and removal of Lev protecting groups; 50 mg of polymer support (polysterene grafted on the surface of polytetrafluoroethylene) was used for the synthesis in micro-column variant. The yield of a single coupling step was 60-90%.

L48 ANSWER 34 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 83:266010 BIOSIS
DN BA76:23502
TI HIGH PERFORMANCE LIQUID CHROMATOGRAPHY IN COMBINATION WITH FIELD DESORPTION MASS SPECTROMETRY SEPARATION AND IDENTIFICATION OF BUILDING BLOCKS FOR POLY NUCLEOTIDE SYNTHESIS.
AU SELIGER H; BACH T C; GOERTZ H-H; HAPP E; HOLUPIREK M; SEEMANN-PREISING B; SCHIEBEL H-M; SCHULTEN H-R
CS UNIV. ULM, SEKT. POLYMERE, OBERER ESELSBERG, D-7900, ULM.
SO J CHROMATOGR 253 (1). 1982 (RECD. 1983). 65-80. CODEN: JOCRAM ISSN: 0021-9673
LA English
AB Optimum conditions for analytical and preparative separation of suitably protected mono- and dinucleotides by high-performance liquid chromatography (HPLC) are described. These nucleotide units serve as standard building blocks for the **synthesis** of

ligation) or T4-**polynucleotide** ligase allowed **synthesis** of the promoter models. Degree of polymerization varied from 2-8 in case of chemical ligation and from 2-30 in case of enzymatic ligation. A new chain length regulation **technique** was developed by means of addition of a terminator of polycondensation (unphosphorylated oligonucleotide) in the reaction mixture.

L48 ANSWER 31 OF 69 MEDLINE
AN 83143315 MEDLINE
TI Solid phase **synthesis** of **polynucleotides**. VIII. **Synthesis** of mixed oligodeoxyribonucleotides by the phosphotriester solid phase **method**.
AU Ike Y; Ikuta S; Sato M; Huang T; Itakura K
NC GM28651
GM31259
CA16434
SO Nucleic Acids Res, (1983 Jan 25) 11 (2) 477-88.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 8306
AB A solid phase method for the simultaneous synthesis of mixed oligonucleotides using a phosphotriester approach has been developed. For this synthesis, a mixture of mono or dimeric coupling units is used, and a slight difference in the reactivity of those units is found. However, this difference does not hamper the simultaneous, mixed oligonucleotide synthesis, and the sequence analysis of a product demonstrates the existence of all desired sequences in the final mixture.

L48 ANSWER 32 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 83:181262 BIOSIS
DN BA75:31262
TI FORESHORTENED NUCLEOTIDE ANALOGS AS POTENTIAL BASE PAIRING COMPLEMENTS FOR LIN BENZO ADENOSINE.
AU CZARNIK A W; LEONARD N J
CS ROGER ADAMS LAB., SCH. CHEM. SCI., UNIV. ILL., URBANA, ILL. 61801.
SO J AM CHEM SOC 104 (9). 1982. 2624-2631. CODEN: JACSAT ISSN: 0002-7863
LA English
AB Syntheses of foreshortened nucleotide analogs of uridine were carried out to test the possibility of base pairing with the linearly extended nucleoside lin-benzoadenosine. Phosphorylation of N-(.beta.-D-ribofuranosyl)formamide (F) provided the 5-monophosphate, which could be dephosphorylated by the action of either alkaline phosphatase or, surprisingly, 5'-nucleotidase. Additional phosphorylations by the **method** of Hoard and Ott afforded the 5-di- and triphosphates. The diphosphate, 5-FDP, did not undergo polymerization with **polynucleotide** phosphorylase. **Syntheses** of the self-complementary dinucleoside

poly(dGdC).cntdot.poly(dGdC) and poly(dAdT).cntdot.poly(dAdT) readily form .psi.(-) structures with polylysine, although the **method** of preparation can alter the CD [circular dichroism] spectra. The GC copolymer, which is more susceptible to conversion into A or Z conformers, forms .psi.(+) structures with lysine-alanine copolypeptides more readily than the AT copolymer. Nucleotide base modifications that favor the Z structure, such as bromination and methylation, also favor .psi.(+) formation, and the Co(NH3)6Cl3 reagent that readily induces the Z structure also leads to .psi.(+). Thus, the production of the .psi.(+) structure seems to be frequently correlated with susceptibility to A or Z formation, although there are some cases in which the B conformer also leads to .psi.(+). Polyethylene glycol generally produces a .psi.(-) structure; the differentiation between .psi.(+) and .psi.(-) structures seems to require electrically charged polymers.

L48 ANSWER 29 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 13
AN 84:338802 BIOSIS
DN BA78:75282
TI SYNTHESIS OF A 33 MEMBERED POLY NUCLEOTIDE CONTAINING THE CORE ATT SITE OF PHAGE LAMBDA DNA AND ITS CLONING.
AU KRAVCHENKO V V; SERPINSKII O I; SINYAKOV A N; POPOV S G
CS ALL-UNION RES. INST. MOL. BIOL., KOLTSOVO, NOVOSIBIVSK OBL., USSR.
SO BIOORG KHIM 10 (2). 1984. 220-225. CODEN: BIKHD7
LA Russian
AB Two **polynucleotides** containing 33 monomeric units were **synthesized** by a solid-phase phosphotriester **method**. These polynucleotides form a duplex with protruding 5'-ends, which allows the cloning of the duplex at the EcoRI site of a cloning vehicle. Each polynucleotide was purified by polyacrylamide gel electrophoresis and the duplex obtained was cloned at the EcoRI site of the pUR 222 plasmid DNA. The structure of the cloned duplex containing the core att site of phage .lambda. was confirmed by sequencing.

L48 ANSWER 30 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 14
AN 84:306861 BIOSIS
DN BA78:43341
TI DNA-LIKE DUPLEXES WITH REPETITIONS 7. CHEMICAL ENZYMATIC SYNTHESIS OF THE POLYMERS CONTAINING FRAGMENTS OF NATURAL PROMOTERS.
AU KOROLEVA O N; DRUTSA V L; DOLINNAYA N G; TSYTOVICH A V; SHABAROVA Z A
CS CHEM. FAC., A.N. BELOZERSKII INTERFAC. RES. LAB. MOL. BIOL. BIOORG. CHEM., M.V. LOMONOSOV MOSC. STATE UNIV., MOSCOW, USSR.
SO MOL BIOL (MOSC) 18 (1). 1984. 146-160. CODEN: MOBIBO ISSN: 0026-8984
LA Russian
AB Two types of DNA-duplexes containing the repeating fragments of natural promoters were obtained, starting from synthetic oligodeoxyribonucleotides TGCATTATAA, AACTAGTT, AGTTAACT. Deca- and octanucleotides were synthesized by solid phase **method** with stepwise or blockwise chain elongation. UV- and CD[circular dichroism]-spectroscopy were used to study the physico-chemical properties of the synthetic oligonucleotides. Polycondensation of oligonucleotides induced by water-soluble carbodiimide (chemical

into 5'-[32P]monophosphate deoxyribonucleotides, which are separated from [32P]ATP on an anion-exchange column eluted with 0.1 M NaH2PO4, pH 6.5. Labeled mononucleotides in the effluent are separated by high-performance liquid chromatography. Values for the base composition of calf thymus DNA determined with this modified assay compare very favorably with reported values. The assay was used to measure the level of incorporation of the clinically useful agent bromodeoxyuridine into the DNA of 9L rat brain tumor cells. The modified assay is a very accurate **method** for the determination of levels of base analogs incorporated into DNA.

L48 ANSWER 27 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 12
AN 85:284532 BIOSIS
DN BA79:64528
TI DIRECT DETERMINATION OF URACIL IN PHOSPHORUS-32 URACIL-TRITIUM-LABELED POLY-DEOXYADENYLATE THYMIDYLATE AND BISULFITE-TREATED PHAGE PM-2 DNA.
AU GREEN D A; DEUTSCH W A
CS DEP. BIOCHEM., LA. STATE UNIV., BATON ROUGE, LA. 70803.
SO ANAL BIOCHEM 142 (2). 1984. 497-503. CODEN: ANBCA2 ISSN: 0003-2697
LA English
AB A simple but effective **technique** for determining the presence of uracil existing as either A:U base pairs or G:U base pairs in DNA was developed. DNA is degraded to deoxynucleoside 3'-monophosphates by a combination of micrococcal nuclease and spleen phosphodiesterase. The monophosphates are converted to 5'-end-labeled 32P-labeled diphosphates in a reaction catalyzed by T4 **polynucleotide** kinase. The resultant **product** is then converted to 5'-end-labeled deoxynucleoside monophosphates by P1 nuclease digestion, which specifically removes 3'-phosphates. Successful separation of labeled dUMP from conventional bases in DNA is achieved by 2-dimensional polyethyleneimine chromatography, with its detection determined by autoradiography and liquid scintillation counting. The sensitivity of the **technique** described can detect a minimum 1 .times. 10-16 mol of dUMP in DNA. Additionally, the detection of 5-methylcytosine in human placental DNA demonstrates the flexibility of the **technique** for the analysis of modified bases in DNA.

L48 ANSWER 28 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 84:288128 BIOSIS
DN BA78:24608
TI FORMATION OF PSI-PLUS AND PSI-MINUS DNA.
AU SHIN Y A; EICHHORN G L
CS LAB. CELLULAR AND MOLECULAR BIOL., GERONTOLOGY RESEARCH CENTER, NATL. INST. ON AGING, BALTIMORE, MD 21224.
SO BIOPOLYMERS 23 (2). 1984. 325-336. CODEN: BIPMAA ISSN: 0006-3525
LA English
AB DNA molecules can be organized into ordered aggregates of opposite handedness by complexation with polylysine and other polypeptides; the conditions under which .psi.(+) and .psi.(-) structures are **produced** with the double-helical synthetic **polynucleotides** were investigated. Both

phage coat protein were studied under conditions optimal for native mRNA. Polynucleotides I and II exhibit template activity comparable to that of the native phage RNA fragments. Polynucleotide III with the destroyed SD sequence dit not manifest any functional activity either as template or in binding to MS2 phage coat protein.

L48 ANSWER 25 OF 69 MEDLINE
AN 85037932 MEDLINE
TI Synthesis and properties of poly 5-methylthiouridylic acid.
AU Ho Y K
SO Nucleic Acids Res, (1984 Oct 11) 12 (19) 7599-614.
Journal code: O8L. ISSN: 0305-1048.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 8502
AB In an effort to search for good **methods** for the enzymatic **synthesis** of **polynucleotide** analogs with antitemplate activity, 5-methylthiouridine-5'-diphosphate (ms5UDP) has been synthesized and investigated as a substrate for polynucleotide phosphorylase. While ms5UDP was polymerized at a very low rate to give a 6% yield of polynucleotides by the polynucleotide phosphorylase of Micrococcus luteus, it was utilized more efficiently by the corresponding enzyme of Escherichia coli resulting in a 15% yield of poly (5-methylthiouridylic) acid. Results of the co-polymerization of ms5UDP and UDP revealed that the ratio of 5-methylthiouridylate to uridylate residues in the **polynucleotide product** was lower than the ratio of ms5UDP to UDP in the substrate mixture. The 5-methylthio group conferred only minute changes on the conformation of the modified polyuridylic acid, and the complexes formed between poly-(5-methylthiouridylic) acid and poly(adenylic) acid possessed slightly higher Tm values than did the unmodified counterparts. Poly(5-methylthiouridylic) acid was a potent inhibitor of calf thymus DNA polymerase alpha.

L48 ANSWER 26 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 11
AN 85:289613 BIOSIS
DN BA79:69609
TI A PHOSPHORUS-32 POSTLABELING ASSAY FOR DETERMINING THE INCORPORATION OF BROMODEOXYURIDINE INTO CELLULAR DNA.
AU BODELL W J; RASMUSSEN J
CS BRAIN TUMOR RES. CENT., DEP. NEUROL. SURG., SCH. MED., UNIV. CALIF., SAN FRANCISCO, CALIF. 94143.
SO ANAL BIOCHEM 142 (2). 1984. 525-528. CODEN: ANBCA2 ISSN: 0003-2697
LA English
AB Randerath's procedure for 32P postlabeling of 3'-monophosphate deoxyribonucleotides from digests of cellular DNA has been modified. 3'-Monophosphate deoxyribonucleotides are converted to 3',5'-bis[32P]phosphate deoxyribonucleotides with **polynucleotide** kinase and [32P]ATP; these **products** are enzymatically converted by P1 nuclease and polynucleotide kinase

DT Journal; Article; (JOURNAL ARTICLE)
LA Russian
FS Priority Journals
EM 8610
AB A series of oligonucleotides, including two **polynucleotides** of 33 bases long, were **synthesized** by a solid-phase phosphotriester **method**. Potassium salt of 3-nitro-1,2,4-triazole in the presence of 18-crown-6 ether was used as nucleophilic catalyst. The partly complementary polynucleotides were elongated by DNA-polymerase I (Klenow fragment) to the full duplex, which was digested with SalGI and was inserted into a plasmid pUR222. Phe synthesized DNA fragment precedes the gene of human gamma-interferon in the chromosome and contains the site for mRNA binding to ribosome.

L48 ANSWER 23 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 86:319718 BIOSIS
DN BA82:44023
TI THE SYNTHESIS OF 5' BIOTIN-LABELED OLIGONUCLEOTIDES AND POLYNUCLEOTIDES AND INVESTIGATION OF THEIR COMPLEXES WITH AVIDIN.
AU BROSALINA E B; GRACHEV S A
CS NOVOSIB. INST. BIOORG. CHEM., SIB. DEP., ACAD. SCI. USSR, NOVOSIBIRSK, USSR.
SO BIOORG KHIM 12 (2). 1986. 248-256. CODEN: BIKHD7
LA Russian
AB An effective **method** for **preparation** of 5'-biotinylated oligo- and **polynucleotides** (via NH(CH2)nNH spacers, n = 3-5) has been developed. The stoichiometries of complexes of these derivatives with avidin were determined. It was shown that no more than two molecules of a 5'-biotinylated oligo- or polynucleotide could be attached to one molecule of avidin. Binding of avidin to the complex of a 5'-biotinylated dodecanucleotide with complementary single-stranded DNA caused its dissociation.

L48 ANSWER 24 OF 69 MEDLINE
AN 85204424 MEDLINE
TI Synthesis and functional activity of translation initiation regions in mRNA. 20-base polyribonucleotides from the replicase gene of phage MS2 and fr.
AU Renhof R; Cielens I; Nikitina T; Sherinya L; Shomshtein Z; Gren E J
SO FEBS Lett, (1985 Jun 17) 185 (2) 277-81.
Journal code: EUH. ISSN: 0014-5793.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 8509
AB Three 20-base polyribonucleotides, AAACAUGAGGAAUACCCAUG (I), AAACAUGAGGAAAACCCAUG (II), AAACAUGAAGAAUACCCAUG (III), corresponding to the minimal initiation region for the replicase gene of phage MS2 and fr or having some differences were synthesized using enzymatic **methods**. The template activity of the **synthesized polynucleotides** in initiation and their capacity to bind

L48 ANSWER 20 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 88:195998 BIOSIS
DN BA85:97344
TI MODIFICATION OF OLIGOPOLYNUCLEOTIDE PHOSPHOMONOESTER GROUPS IN AQUEOUS SOLUTIONS.
AU IVANOVSKAYA M G; GOTTIKH M B; SHABAROVA Z A
CS DEP. CHEM., MOSCOW STATE UNIV., MOSCOW 119899, USSR.
SO NUCLEOSIDES NUCLEOTIDES 6 (5). 1987. 913-934. CODEN: NUNUD5 ISSN: 0732-8311
LA English
AB Selective modification of oligo(poly)nucleotide phosphomonoester groups in an aqueous medium by N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide in the presence of various nucleophilic agents has been investigated. Optimal conditions of the modification by amino- and hydroxycompounds have been found. Based on these studies a general efficient **method** for **preparation** of oligo(**poly**)**nucleotide** phosphoamidates and phosphodiesters in an aqueous solution has been developed. The **method** allows to prepare both oligodeoxyribonucleotide derivatives at 3'- and 5'-terminal phosphate groups and oligoribonucleotide derivatives at 5'-terminal phosphate groups with 80-100% yields.

L48 ANSWER 21 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 87:44639 BIOSIS
DN BA83:23985
TI SYNTHESIS AND CLONING OF THE DNA FRAGMENT CONTAINING A PUTATIVE SITE FOR EUKARYOTIC MESSENGER RNA BINDING TO RIBOSOME.
AU SINYAKOV A N; SERTINSKII O I; DANILYUK N K
CS ALL-UNION RES. INST. MOL. BIOL., NOVOSIBIRSK, USSR.
SO BIOORG KHIM 12 (5). 1986. 655-660. CODEN: BIKHD7
LA Russian
AB A series of oligonucleotides, including two **polynucleotides** of 33 bases long, were **synthesized** by a solid-phase phosphotriester **method**. Potassium salt of 3-nitro-1,2,4-triazole in the presence of 18-crown-6 ether was used as nucleophilic catalyst. The partly complementary polynucleotides were elongated by DNA-polymerase I (Klenow fragment) to the full duplex, which was digested with SalGI and was inserted into a plasmid pUR222. The synthesized DNA fragment precedes the gene of human .gamma.-interferon in the chromosome and contains the site for mRNA binding to ribosome.

L48 ANSWER 22 OF 69 MEDLINE
AN 86269161 MEDLINE
TI [Synthesis and cloning of a DNA fragment containing a probable site for eukaryotic mRNA binding to ribosome].
Sintez i klonirovanie fragmenta DNK, soderzhashchego predpolagaemyi sait sviazyvaniia eukarioticheskoi mRNK s ribosomo.
AU Siniakov A N; Serpinskii O I; Daniliuk N K
SO Bioorg Khim, (1986 May) 12 (5) 655-60.
Journal code: 9Z8. ISSN: 0132-3423.
CY USSR

DN BA85:92144
TI RATE OF INCORPORATION OF RADIOLABELLED NUCLEOSIDES DOES NOT NECESSARILY REFLECT THE METABOLIC STATE OF CELLS IN CULTURE EFFECTS OF LATENT MYCOPLASMA CONTAMINATION.
AU MERKENSCHLAGER M; KARDAMAKIS D; RAWLE F C; SPURR N; BEVERLEY P C L
CS HUMAN TUMOR IMMUNOL. GROUP, FAC. CLINICAL SCI., UNIV. COLL. LONDON, UNIV. STREET, LONDON WC1E 6JJ, UK.
SO IMMUNOLOGY 63 (1). 1988. 125-132. CODEN: IMMUAM ISSN: 0019-2805
LA English
AB In response to cell-free conditioned medium derived from the human bladder carcinoma line T24 (T24 SN) we found greatly induced incorporation of tritiated thymidine and uridine ([3H]TdR, [3H]UR) by the human carcinoma lines UCHNCu (small-cell lung carcinoma) and LS174T (colon carcinoma). The effect was not due to excess of nucleosides or cytokines known to be present in T24 SN. Cell-cycle distribution, increase in cell numbers, and de novo nucleoside synthesis in the indicator cells were only slightly altered. This was in contrast to the gross reduction in [3H]TdR/[3H]UR incorporation and seemed to indicate selective downregulation of pyrimidine-salvage pathways, despite ongoing **polynucleotide synthesis** . Spontaneous [3H]TdR uptake remained low for several passages in vitro but was readily restored by pharmacological inhibition of de novo pathways with 5-fluoro-deoxy-uridine (5-FUdR). This suggested a stable but reversible regulatory effect of T24 SN on the pyrimidine metabolism of the indicator cells. Further investigation showed degradation of [3H]TdR by a particle-bound activity in T24 SN. Mycoplasma contamination of T24 had not been detectable using standard cultural and staining **methods**, but became apparent when T24 cell lysates were hybridized with a recently described DNA probe (Goebel & Stanbridge, 1984). We conclude that latent mycoplasma contamination can simulate changes in cellular pyrimidine metabolism. Our results provide an example for latent mycoplasma infection mimicking metabolic changes in cultured cells by direct interference of a microbial enzyme with the assay system. We describe a rapid and simple bioassay to detect and distinguish particle-associated and soluble phosphorylase activity by [3H]TdR degradation. It may be a useful screening assay for mycoplasma contamination in tissue culture.

L48 ANSWER 19 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 87:472339 BIOSIS
DN BR33:110480
TI ATP-**POLYNUCLEOTIDE** ADENYLYLTRANSFERASE ENZYME AND **METHOD** OF **PREPARATION** THEREOF.
AU MANS R J
CS GAINESVILLE, FLA., USA.
ASSIGNEE: UNIVERSITY OF FLORIDA
PI US 4695550 22 Sep 1987
SO OFF GAZ U S PAT TRADEMARK OFF PAT 1082 (4). 1987. 2033. CODEN: OGUPE7 ISSN: 0098-1133
DT Patent
LA English

AN 89:52728 BIOSIS
DN BA87:28728
TI BINDING OF CISPLATIN TO SPECIFIC SEQUENCES OF HUMAN DNA IN-VITRO.
AU HEMMINKI K; THILLY W G
CS INST. OF OCCUPATIONAL HEALTH, TOPELIUKSENKATA 41 AA, 00250 HELSINKI.
SO MUTAT RES 202 (1). 1988. 133-138. CODEN: MUREAV ISSN: 0027-5107
LA English
AB Cisplatin was reacted with a 184-base-pair sequence, exon 3, of human HPRT DNA in vitro. The binding sites were mapped by a primer extension **method** with T4 DNA polymerase and radioactive dCTP. Binding sites of cisplatin were indicated by the lengths of **synthesized polynucleotides** as determined by gel electrophoresis. Neighboring GG dinucleotides were highly preferred sites of binding by cisplatin, while less binding was noted to GXG, GA, AAA, and GXA. Analysis by densitometry revealed a 5-fold difference in binding among the GG sequences. The relative binding to a GGG sequence exceeded that of a GGGGGG sequence, suggesting that the number of Gs in a run did not determine the relative binding.

L48 ANSWER 17 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 9
AN 88:243117 BIOSIS
DN BA85:121519
TI USE OF A DODECADEOXYNUCLEOTIDE TO STUDY REPAIR OF THE O-4 METHYLTHYMINE LESION.
AU DOLAN M E; OPLINGER M; PEGG A E
CS DEP. PHYSIOL., MILTON S. HERSHEY MED. CENT., PA. STATE UNIV., P.O. BOX 850, HERSHEY, PA. 17033.
SO MUTAT RES 193 (2). 1988. 131-138. CODEN: MUREAV ISSN: 0027-5107
LA English
AB A dodecadeoxynucleotide of defined sequence of containing O4-methylthymine was labeled at the 5' end with [32P] by the reaction with [.gamma.-32P]ATP and **polynucleotide** kinase. Extracts **prepared** from bacterial and mammalian sources such as the human cell lines, HeLa and HT29, and rat liver were incubated with the labeled, methylated dodecamer to determine the extent of repair of the lesion. The labeled, demethylated dodecamer was separated from the labeled methylated dodecamer on a reverse-phase column using a shallow methanol gradient. There was complete repair of O4-methylthymine by the E. coli alkyltransferase upon incubation for 4 h at 37.degree. C. There was no detectable amount of demethylated product formed upon incubation with HeLa or HT29 cell extract for the same incubation period. There was also no repair of the O4-methylthymine lesion in the presence of crude rat-liver extract. However, the rat-liver extract alone degraded the methylated substrate completely, and the assay had to be conducted in the presence of NaF, AMP and unlabeled, nonmethylated dodecamer to prevent this. The results obtained from this assay which is at least an order of magnitude more sensitive than previous **methods**, are in agreement with previous results that the mammalian alkyltransferase is specific for O6-alkylguanine repair.

L48 ANSWER 18 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 10
AN 88:180042 BIOSIS

transcription termination factor rho to single-stranded RNA. Random polyribonucleotide copolymers containing low ratios of the fluorescent base 1,N6-ethenoadenosine have been **synthesized** using **polynucleotide** phosphorylase. Binding of rho to these polynucleotides elicits a significant increase in fluorescence, thus allowing either the direct monitoring of the titration of these polynucleotides with rho or measurement of the competitive displacement of the protein from these probes with other nucleic acids, even in the presence of biologically significant concentrations of ATP. By these **techniques**, it is shown that the binding site size (n) of rho protein to polynucleotides is 13(.+-.1) nucleotide residues per rho monomer (or 78 (.+-.6) nucleotide residues per rho hexamer). Binding constants (K) and co-operativity parameters (.omega.) for the binding of rho to these polynucleotides have been measured as a function of nucleotide composition and of salt concentration. The results show tht the affinity of rho for cytosine residues is quite strong and salt concentration independent, whilst binding to uridine residues is somewhat weaker and very salt concentration dependent. Poly(rC) and poly(dC) bind to rho competitively and with equal affinity and site size, although poly(rC) is the strongest cofactor for activating rho-dependent ATPase and poly(dC) has no ATPase cofactor activity at all. It is also shown that ATP (or ADP or ATP-.gamma.-S) binding does not change the binding site size of rho on RNA nor decrease its affinity for RNA binding. Circular dichroism measurements of rho binding to phage R17 RNA suggest that the affinity (K.omega.) or rho for RNA may be increased by ATP. The possible significance of these results for models of rho-dependent transcription termination is discussed in the companion paper.

L48 ANSWER 15 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 7
AN 88:228231 BIOSIS
DN BA85:117466
TI DETECTION OF HUMAN IMMUNODEFICIENCY VIRUS AND OTHER RETROVIRUSES IN CELL CULTURE SUPERNATANTS BY A REVERSE TRANSCRIPTASE MICROASSAY.
AU GREGERSEN J P; WEGE H; PREISS L; JENTSCH K D
CS RES. LAB. BEHRINGWERKE AG, 3550 MARBURG, WEST GERMANY.
SO J VIROL METHODS 19 (2). 1988. 161-168. CODEN: JVMEDH ISSN: 0166-0934
LA English
AB A micromethod for the detection of human immunodeficiency virus (HIV) and other retroviruses in cell culture supernatants is described which applies a DEAE ion exchanger for recovery of **polynucleotides synthesized** in vitro by the retroviral reverse transcriptase. Cell culture, sample preparation, and test performance including the washing step are adapted to microtitre plates. Compared to the standard **method** this **technique** produced less non-specific reactions, resulting in a more than 3-fold higher sensitivity, a higher reproducibility due to lower intrarun variations and allowed an increase in the daily sample accomplishment per person 3- to 4-fold at lower costs per sample.

L48 ANSWER 16 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 8

or 2',3',5'-tri-O-acyl-5-CHBr2-uridine. The formyl group is preferably protected by propane diol, glycol, or catechol. The labeled products are useful as hybridization probes (DNA probes) in research, medicine, agriculture and food processing for detecting viruses and bacteria. The probes can be prepared easily and cheaply and are highly sensitive. The modified triphosphates are incorporated without damaging enzymes or adversely affecting bases or bonds in the polynucleotide. (16pp)

L48 ANSWER 13 OF 69 BIOTECHDS COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 89-04359 BIOTECHDS
TI DNA amplification in polynucleotide assays; by extension using nucleoside triphosphates and **template**-dependent polynucleotide **polymerase**, cleavage and dissociation
PA Syntex
PI EP 300796 25 Jan 1989
AI EP 88-306717 21 Jul 1988
PRAI US 87-76807 23 Jul 1987
DT Patent
LA English
OS WPI: 89-025945 [04]
AN 89-04359 BIOTECHDS
AB A new **method** of **producing** multiple copies of a primary **polynucleotide** sequence, located at the 3'-terminus of a polynucleotide, involves: (a) forming an extension of a primary polynucleotide sequence hybridized with a template sequence of a single-stranded pattern polynucleotide comprising 2 or more template sequences each containing one or more cleavable sites, in the presence of nucleoside triphosphates and **template**-dependent polynucleotide-**polymerase**; (b) cleaving the extension into fragments when it is hybridized with the template sequence; (c) dissociating the fragments, comprising a primary polynucleotide sequence; and (d) hybridizing the fragments with the single-stranded pattern polynucleotide. Steps (a)-(d) are repeated and may be conducted simultaneously or partially sequentially. This procedure may be used to facilitate detection of a polynucleotide analyte containing a target polynucleotide sequence in a sample. Also new are compositions comprising a single-stranded DNA oligomer of 3-100 oligonucleotide units each consisting of an identical oligonucleotide template having 8-100 nucleotides. (35pp)

L48 ANSWER 14 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 6
AN 88:242903 BIOSIS
DN BA85:121305
TI INTERACTIONS OF ESCHERICHIA-COLI TRANSCRIPTION TERMINATION FACTOR RHO WITH RNA I. BINDING STOICHIOMETRIES AND FREE ENERGIES.
AU MCSIGGEN J A; BEAR D G; VON HIPPEL P H
CS DEP. CHEM. AND BIOCHEMISTRY, UNIV. COLORADO, BOULDER, COLO. 80309.
SO J MOL BIOL 199 (4). 1988. 609-622. CODEN: JMOBAK ISSN: 0022-2836
LA English
AB In this paper we examine the binding of Escherichia coli

L48 ANSWER 11 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 5
AN 90:310968 BIOSIS
DN BA90:29935
TI PHOSPHORUS-32-POSTLABELLING OF 7 METHYL-DGMP RING-OPENED 7 METHYL-DGMP AND PLATINATED DGPDG.
AU HEMMINKI K; PELTONEN K; MUSTONEN R
CS INST. OCCUPATIONAL HEALTH, TOPELIUKSENKATU 41 A A, 00250 HELSINKI, FINL.
SO CHEM-BIOL INTERACT 74 (1-2). 1990. 45-54. CODEN: CBINA8 ISSN: 0009-2797
LA English
AB The 32P-postlabelling **technique** introduced by Randerath and coworkers was used to investigate the efficiency of the phosphorylation reaction by T4 **polynucleotide** kinase using three **synthesized** adducts: 7-methyl-dGMP, ring-opened 7-methyl-dGMP and platinated dGpdG. The methylated substrates were detected at sub-fmol sensitivities. 7-Methyl-dGMP was quantitatively phosphorylated at these low concentrations. The efficiency of phosphorylation of the ring-opened product was less (about one order of magnitude) and that of Pt(dGpdG) about three orders of magnitude less. These results show that T4 polynucleotide kinase phosphorylation is an efficient reaction with 7-methyl-dGMP and with ring-opened 7-methyl-dGMP, even though in the latter case longer incubation times may have to be used to boost the reaction towards completion. By contrast, the low level of phosphorylation with Pt(dGpdG) does not appear encouraging for quantitative determination requiring a high sensitivity.

L48 ANSWER 12 OF 69 BIOTECHDS COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 89-14199 BIOTECHDS
TI Non radioactive labeling of polynucleotide(s); DNA probe labeling by incorporating 5-formyl-nucleotide prepared from halo-substituted nucleoside, then attaching a label to the formyl group
PA Akad.Land.Wirtschaftwiss.
PI DD 265429 1 Mar 1989
AI DD 87-307420 30 Sep 1987
PRAI DD 87-307420 30 Sep 1987
DT Patent
LA German
OS WPI: 89-221066 [31]
AN 89-14199 BIOTECHDS
AB A new **method** for non-radioactively labeling polynucleotides comprises: (1) converting a side chain halogenated nucleoside into the formyl derivative (or its protected derivative, e.g. hydrogen sulfite, cyanohydrin, thioacetal or acetal); (2) converting the product into a nucleotide by phosphorylation; (3) forming the triphosphate by phosphorylation; (4) incorporating the **product** into a **polynucleotide** using polymerase, **terminal transferase** or other enzymes; and attaching the label, optionally after formyl group deprotection. The starting materials are 3',5'-di-O-acyl- 5-CHBr2-2'-deoxyuridine

LA English
AB Binding of the single-stranded DNA-binding protein (SSB) of Escherichia coli to single-stranded (ss) **polynucleotides** **produces** characteristic changes in the absorbance (OD) and circular dichroism (CD) spectra of the polynucleotides. By use of these **techniques**, complexes of SSB protein and poly(rA) were shown to display two of the binding modes reported by Lohman and Overman [Lohman, T. M., & Overman, L. (1985) J. Biol. Chem. 260, 3594-3603]. The circular dichroism spectra of the "low salt" (10 mM NaCl) and "high salt" (> 50 mM NaCl) binding mode are similar in shape, but not in intensity. SSB binding to poly(rA) yields a complexed CD spectrum that shares several characteristics with the spectra obtained for the binding of AdDBP, GP32, and gene V protein to poly(rA). We therefore propose that the local structure of the SSB-poly(rA) complex is comparable to the structures proposed for the complexes of these three-stranded DNA-binding proteins with DNA (and RNA) and independent of the SSB-binding mode. Electric field induced birefringence experiments were used to show that the projected base-base distance of the complex is about 0.23 nm, in agreement with electron microscopy results. Nevertheless, the local distance between the successive bases in the complex will be quite large, due to the coiling of the DNA around the SSB tetramer, thus partly explaining the observed CD changes induced upon complexation with single-stranded DNA and RNA.

L48 ANSWER 10 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 4
AN 90:496002 BIOSIS
DN BA90:124348
TI PHOTOBIOLOGICAL ACTIVITY OF 3 4' DIMETHYL-8-METHOXYPSORALEN A LINEAR FUROCOUMARIN WITH UNUSUAL DNA-BINDING PROPERTIES.
AU PALUMBO M; BACCICHETTI F; ANTONELLO C; GIA O; CAPOZZI A; MAGNO S M
CS DEP. ORGANIC CHEM., BIOPOLYMER RES. CENT., VIA MARZOLO 1, 35131 PADOVA, ITALY.
SO PHOTOCHEM PHOTOBIOL 52 (3). 1990. 533-540. CODEN: PHCBAP ISSN: 0031-8655
LA English
AB The furocoumarin derivative 3,4'-dimethyl-8-methoxypsoralen (DMe-8-MOP) exhibits remarkable antiproliferative activity, but is devoid of skin phototoxicity. To gain insight into this peculiar behaviour we investigated non-covalent binding of DMe-8-MOP to calf thymus DNA, along with DNA-synthesis inhibition and mutagenic activity. The non-covalent interaction of DMe-8-MOP with the nucleic acid is quite poor as shown by equilibrium dialysis, spectroscopic, chiroptical and hydrodynamic **techniques**. However, it exhibits relevant photobinding ability to DNA using both isolated nucleic acid samples and cellular systems. Unlike the large majority of cogeners, DMe-8-MOP undergoes predominantly photochemical monoaddition to the double helical **polynucleotide**. Upon examination of the **products** obtained by enzymatic hydrolysis of DMe-8-MOP photomodified DNA, the formation of an unusual furan side adduct is proposed, which could account for the peculiar photochemical and photobiological properties of the 3,4'-dimethyl furocoumarin derivative.

gel electrophoresis and the bending was determined from anomalies of electrophoretic mobility. Replacement of dA by c3Ad decreased the bending more than replacement by c7Ad. Reduction of bending was much stronger when the modified nucleosides replaced one or several dA residues at the 3'-site of an d(AAAAAA)-tract whereas replacement at the 5'-site showed no significant influence.

L48 ANSWER 8 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 92:365088 BIOSIS
DN BA94:47138
TI PREPARATION OF POLYACRYLAMIDE GEL FILLED CAPILLARIES FOR ULTRAHIGH RESOLUTION OF POLYNUCLEOTIDES BY CAPILLARY GEL ELECTROPHORESIS.
AU BABA Y; MATSUURA T; WAKAMOTO K; MORITA Y; NISHITSU Y; TSUHAKO M
CS KOBE WOMEN'S COLL. PHARM., KITAMACHI, MOTOYAMA, HIGASHINADA-KU, KOBE 658, JPN.
SO ANAL CHEM 64 (11). 1992. 1221-1225. CODEN: ANCHAM ISSN: 0003-2700
LA English
AB A **method** for the production of polyacrylamide gel filled capillaries was studied in detail. A polymerizing solution of acrylamde was injected into the capillary without its inner surface pretreatment and polymerized, in situ, by radical initiators. Bubble formation in capillaries was avoided by using well-designed injection equipment, which was developed for use in this study. Performance of gel-filled capillaries was examined in terms of stability, reproducibility of migration time, feasibility of **method**, and resolving power of **polynucleotides**. Gel-filled capillaries **prepared** by this **method** showed high precision in relative migration time, ultrahigh resolution of polynucleotides, and wide applicability. Average relative standard deviations in migration times for polynucleotides in the chain length range from 50 to 250mer were 1.1% (run to run), 1.5% (day to day), and 2.1% (batch to batch), respectively. Stability of the gel-filled capillary was less than that of a gel-filled capillary in which the gel was chemically bound to the capillary inner surface. A plate number for a gel-filled capillary of 1.5 .times. 107 m-1 was achieved. Mixtures of 450 kinds of polyadenylic acids were baseline-resolved and analyzed within 100 min. High-resolution separation of a mixture of polydeoxyadenylic acids was also achieved. The **method** was demonstrated to be applicable to the production of gel-filled capillaries with wide varieties of gel composition and capillary diameters. Advantages and limitations of this **method** are discussed.

L48 ANSWER 9 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 3
AN 90:471213 BIOSIS
DN BA90:110633
TI STUDY OF THE BINDING OF SINGLE-STRANDED DNA-BINDING PROTEIN TO DNA AND POLY-RA USING ELECTRIC FIELD INDUCED BIREFRINGENCE AND CIRCULAR DICHROISM SPECTROSCOPY.
AU KUIL M E; HOLMLUND K; VLAANDEREN C A; VAN GRONDELLE R
CS INST. THEORETICAL PHYSICS, CHALMERS UNIV. TECHNOL., UNIV. GOTEBORG, S-41296 GOTEBORG, SWED.
SO BIOCHEMISTRY 29 (35). 1990. 8184-8189. CODEN: BICHAW ISSN: 0006-2960

Up to 5 oligonucleotides could be used simultaneously. (50 ref)

L48 ANSWER 5 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 93:307314 BIOSIS
DN BR45:13839
TI EFFICIENT **METHOD** FOR THE **PREPARATION** OF ESCHERICHIA-COLI **POLYNUCLEOTIDE** PHOSPHORYLASE SUITABLE FOR THE **SYNTHESIS** OF **POLYNUCLEOTIDES**.
AU MARUMO G; NOGUCHI T; MIDORIKAWA Y
CS RES. LAB., YAMASA CORP., CHOSHI, CHIBA 288, JAPAN.
SO BIOSCI BIOTECHNOL BIOCHEM 57 (3). 1993. 513-514. CODEN: BBBIEJ
LA English

L48 ANSWER 6 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 93:389989 BIOSIS
DN BA96:65289
TI NUCLEIC ACID HYBRIDIZATION ON NITROCELLULOSE FILTERS OF VACUUM SPOTTED ESCHERICHIA-COLI BACTERIAL CELLS.
AU IVANOV I; DRAGULEV B; ABOUHAIDAR M G
CS DEP. BOT., UNIVERSITY TORONTO, 25 WILLCOCKS ST., TORONTO, ON, CAN. M5S 2B2.
SO J MICROBIOL METHODS 17 (4). 1993. 305-310. CODEN: JMIMDQ ISSN: 0167-7012
LA English
AB The in situ **techniques** for DNA and RNA colony hybridization were adapted for application to Escherichia coli bacterial cells grown in liquid media and loaded onto membrane filters by microfiltration. A linear correlation was found between the amount of loaded cells and the 32P-radioactivity retained on the filters. This makes is possible to apply both **techniques** for quantitative determination of specific **polynucleotides produced** at different stages of bacterial growth.

L48 ANSWER 7 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 92:343442 BIOSIS
DN BA94:35667
TI 7 DEAZA-2'-DEOXYADENOSINE AND 3 DEAZA-2'-DEOXYADENOSINE REPLACING DA WITHIN D-A-6-TRACTS DIFFERENTIAL BENDING AT 3' AND 5'-JUNCTIONS OF D-A-6 D-T-6 AND B DNA.
AU SEELA F; GREIN T
CS LAB. ORGANISCHE UND BIOORGANISCHE CHEM., FACHBEREICH BIOL./CHEMIE, UNIV. OSNABRUECK, BARBARASTRASSE 7, D-4500 OSNABRUECK, GER.
SO NUCLEIC ACIDS RES 20 (9). 1992. 2297-2306. CODEN: NARHAD ISSN: 0305-1048
LA English
AB 7-Deaza-2'-deoxyadenosine (1, c7Ad) and 3-deaza-2'-deoxyadenosine (2, c3Ad) have been incorporated into d(AAAAAA) tracts replacing dA at various positions within oligonucleotides. For this purpose suitably protected phosphonates have been prepared and oligonucleotides were synthesized on solid-phase. The oligomers were hybridized with their cognate strands. The duplexes were phosphorylated at OH-5' by polynucleotide kinase and self-ligated to multimers employing T4 DNA ligase. Oligomerized DNA-fragments were analyzed by polyacrylamide

potential mutagenic **polynucleotide** sequences in recombinant plasmid constructions **produced** for gene therapy purposes.

L48 ANSWER 3 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS
AN 95:43879 BIOSIS
DN 98058179
TI T4 polynucleotide kinase. III. Purification.
AU Vratskikh L V; Timofeeva O A; Yamkovoi V I
CS Novosib. State Univ., Novosibirsk 630090, Russia
SO Biotekhnologiya 0 (5). 1994. 17-19. ISSN: 0234-2758
LA Russian
AB T4 polynucleotide kinase has been isolated from the biomass of E. coli infected with T4 am N82 bacteriophage using fractionation with streptomycin, ammonium sulfate and on DEAE-Sephadex A-50 and phosphocellulose P-II. The yield of enzyme was increased by a factor of ten in comparison with the precursor **method**. The obtained **preparation** of **polynucleotide** kinase can be used for oligoribonucleotide phosphorylation.

L48 ANSWER 4 OF 69 BIOTECHDS COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 93-09095 BIOTECHDS
TI Synthetic gene for the hepatitis C virus nucleocapsid protein; diagnostic protein artificial gene construction by a new exchangeable template reaction method and cloning in Escherichia coli
AU Khudyakov Y E; Fields H A; Favorov M O; Khudyakova N S; Bonafonte M T; Holloway B
CS Biokit
LO Hepatitis Branch, National Center for Infectious Diseases, Centers for Disease Control, 1600 Clifton Road, Atlanta, GA 30333, USA.
SO Nucleic Acids Res.; (1993) 21, 11, 2747-54
CODEN: NARHAD
DT Journal
LA English
AN 93-09095 BIOTECHDS
AB An artificial gene encoding the hepatitis C virus (HCV) nucleocapsid protein was constructed and expressed in Escherichia coli BL21 (DE3). To synthesize this gene, a new **method** (the exchangeable template reaction, ETR) was developed, which resulted in enzymatic **synthesis** of long **polynucleotides** from oligonucleotides. ETR used oligonucleotide DNA templates for DNA-polymerase (EC-2.7.7.7). A special mechanism was designed to exchange the templates during the polymerase reaction, involving formation of a single-stranded 3'-protrusion at the 'growing point' of the DNA, so that it could be annealed sequence-specifically with the next synthetic oligonucleotide. When annealed, the added oligonucleotide became a **template** for DNA-**polymerase**, and the protruding 3'-end of the double-stranded DNA was used as the primer. The HCV nucleocapsid gene was assembled with DNA-ligase from 3 fragments produced by ETR. The **method** was efficient, and more than 2 oligonucleotides could be combined in 1 tube, together with polymerase and an enzyme producing a 3'-protrusion (e.g. BstXI).

=> d 1-69 bib abs; fil biosi; s l37 and (substrate# or 3(1w)hydroxyl? or nucleoside#)

L48 ANSWER 1 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 1
AN 95:77431 BIOSIS
DN 98091731
TI Novel approach to molecular cloning and polynucleotide synthesis using vaccinia DNA topoisomerase.
AU Shuman S
CS Mol. Biol. Program, Sloan-Kettering Inst., 1275 York Ae., New York, NY 10021, USA
SO Journal of Biological Chemistry 269 (51). 1994. 32678-32684. ISSN: 0021-9258
LA English
AB Construction of chimaeric DNA molecules in vitro relies traditionally on two enzymatic steps catalyzed by separate protein components. Site-specific restriction endonucleases are used to generate linear DNAs with defined termini that can then be joined covalently at their ends via the action of DNA ligase. A novel approach to the synthesis of recombinant DNAs exploits the ability of a single enzyme, vaccinia DNA topoisomerase, to both cleave and rejoin DNA strands with extreme specificity at each step. Placement of the CCCTT cleavage motif for vaccinia topoisomerase near the end of a duplex DNA permits efficient generation of a stable, highly recombinogenic protein-DNA adduct that can relegate only to acceptor DNAs that contain complementary single-strand extensions. Linear DNAs containing CCCTT cleavage sites at both ends (bivalent substrates) can be activated by topoisomerase and inserted into a plasmid vector in a simple and rapid in vitro procedure that is especially well suited to the molecular cloning of polymerase chain reaction-amplified DNAs. Activation of polyvalent (e.g. branched) DNA substrates by topoisomerase offers a potentially powerful **method** for the **synthesis** of two- and three-dimensional **polynucleotide** networks.

L48 ANSWER 2 OF 69 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 2
AN 94:545264 BIOSIS
DN 98004812
TI Mutagenic activity of recombinant plasmid DNAs in the competent culture of Bacillus subtilis.
AU Karpova I S; Pidpala O V; Shul'zhenko V N; Kostetskii I E; Koretskaya N V; Lukash L L
CS Inst. Mol. Biol. Genet., Acad. Sci. Ukr., Kiev, Ukraine
SO Tsitologiya i Genetika 28 (1). 1994. 66-73. ISSN: 0564-3783
LA Russian
AB The **method** for testing foreign plasmid DNA mutagenicity on the competent culture of B. subtilis has been developed. High mutagenic effect of DNA of recombinant plasmids carrying a single human Alu-repeat or the same repeat in combination with human apoAi gene or human insulin gene was demonstrated. The vector plasmid pUC18 had no mutagenic activity. According to the data of dot-blotting some fragments of recombinant plasmid DNA of human origin can integrate in B. subtilis chromosome by means of illegitimate recombination. It is concluded that B. subtilis test-system is suitable for detection of

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        105867 POLY
          5605 NUCLEOTIDE#
           121 POLY NUCLEOTIDE#
                 (POLY(W)NUCLEOTIDE#)
       1391251 PROD?
        626003 PREP?
         56388 SYNTHES?
        599084 METHOD#
         49790 TECHNIQUE#
L45         79 L37(L)(METHOD# OR TECHNIQUE#)

=> s l45 and (l30 or template(3w)polymerase# or terminal(3w)transferase#)
'CN' IS NOT A VALID FIELD CODE
             0 TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE?/CN
          8729 TEMPLATE
          1102 POLYMERASE#
            18 TEMPLATE(3W)POLYMERASE#
        151496 TERMINAL
          1421 TRANSFERASE#
            51 TERMINAL(3W)TRANSFERASE#
L46          2 L45 AND (L30 OR TEMPLATE(3W)POLYMERASE# OR TERMINAL(3W)TRA
               NSFERASE#)

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L47          2 L46 NOT L24

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PROCESSING COMPLETED FOR L47
L48         69 DUP REM L39 L41 L43 L47 (15 DUPLICATES REMOVED)
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         41417 METHOD#
          9743 TECHNIQUE#
L42         68 L37(L)(METHOD# OR TECHNIQUE#)

=> s l42 and (l30 or template(3w)polymerase# or terminal(3w)transferase#)
             0 TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE?/CN
          1253 TEMPLATE
          5899 POLYMERASE#
            74 TEMPLATE(3W)POLYMERASE#
          6626 TERMINAL
           895 TRANSFERASE#
           112 TERMINAL(3W)TRANSFERASE#
L43           3 L42 AND (L30 OR TEMPLATE(3W)POLYMERASE# OR TERMINAL(3W)TRA
              NSFERASE#)

=> fil biosi; s l39 and (l30 or template(3w)polymerase# or
terminal(3w)transferase#)
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             0 L30
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         62881 POLYMERASE#
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        100278 TERMINAL
         45436 TRANSFERASE#
          1368 TERMINAL(3W)TRANSFERASE#
L44           0 L39 AND (L30 OR TEMPLATE(3W)POLYMERASE# OR TERMINAL(3W)TRA
              NSFERASE#)

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       758291 METHOD#
       307563 TECHNIQUE#
L38         45 L37(L)(METHOD# OR TECHNIQUE#)

=> s l38 not l12
L39         45 L38 NOT L12

=> fil medl; s l38
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        28718 POLY
       100512 NUCLEOTIDE#
           17 POLY NUCLEOTIDE#
              (POLY(W)NUCLEOTIDE#)
       604837 PROD?
       260909 PREP?
       258753 SYNTHES?
      1137657 METHOD#
       479129 TECHNIQUE#
L40         34 L37(L)(METHOD# OR TECHNIQUE#)

=> s l40 not l17; fil biotechds; s l38
L41         34 L40 NOT L17


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         6149 NUCLEOTIDE#
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              (POLY(W)NUCLEOTIDE#)
       101089 PROD?
        86662 PREP?
        15225 SYNTHES?
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IN Eggset, Guri; Guddal, Per Henrik; Krokan, Hans Einar; Lindqvist, Bjoern Hadar; Volden, Gunnar
AI WO 85-NO49 850820
PI WO 8701134 A1 870226
PY 1987
AB A photoimmune **method** for detecting a polynucleotide sequence in a nucleic acid sample comprises (1) **prepg.** a **polynucleotide** probe having a nucleotide sequence complementary to that of the nucleic acid to be detected; (2) inducing formation of UV photoproducts in the probe by UV irradn.; (3) contacting the UV-irradiated probe with single-stranded nucleic acid from the sample under hybridizing conditions; and (4) detecting the hybridized complexes with labeled antibodies to the UV-irradiated probe. Detection of bacteriophage Hy17 DNA was performed using as probes Hy17 DNA HindIII restriction fragments provided with poly(T) tails using **terminal transferase**. The probes were irradiated with 2500 J/m2 at 254 nm, and incubated under hybridizing conditions with Hy17 DNA immobilized on a Gene Screen membrane. Enzyme-labeled rabbit antibodies to the UV-irradiated probes were used to detect the specifically bound probes. Only the blots contg. Hy17 DNA were stained. The sensitivity of detection was in the pg range.

=> fil biosi; s (polynucleotide# or poly nucleotide#)(5a)(prod? or prep? or synthes?)
FILE 'BIOSIS' ENTERED AT 12:59:23 ON 10 APR 95

FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 3 April 1995 (950403/ED)
CAS REGISTRY NUMBERS (R) LAST ADDED: 4 April 1995 (950404/UP)

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```
         2876 POLYNUCLEOTIDE#
       113997 POLY
       123824 NUCLEOTIDE#
         2211 POLY NUCLEOTIDE#
                (POLY(W)NUCLEOTIDE#)
       878871 PROD?
       291686 PREP?
       390406 SYNTHES?
L37       414 (POLYNUCLEOTIDE# OR POLY NUCLEOTIDE#)(5A)(PROD? OR PREP? O
              R SYNTHES?)
```

=> s l37(l)(method# or technique#)

=> s l35 not l33
L36 2 L35 NOT L33

=> d 1-2 .beverly

L36 ANSWER 1 OF 2 CA COPYRIGHT 1995 ACS
AN 112:194914 CA
TI Hybrilization method for polynucleotide assays
SO Eur. Pat. Appl., 35 pp.
CODEN: EPXXDW
IN Becker, Martin; Goodman, Thomas; Rose, Samual; Ullman, Edwin F.
AI EP 88-306717 880721
PI EP 300796 A2 890125
PY 1989
AB A **method** for **producing** multiple copies of a primary **polynucleotide** sequence located at the 3' terminus of a polynucleotide comprises (a) forming in the presence of nucleoside triphosphates and **template**-dependent polynucleotide **polymerase** an extension of a primary polynucleotide sequence hybridized with a template sequence of a single-stranded pattern polynucleotide comprising .gtoreq.2 template sequences, each contg. .gtoreq.1 cleavable sites; (b) cleaving the extension into fragments at cleavable sites in the presence of means for specifically cleaving the cleavable sites when the extension is hybridized with the template sequence; (c) dissocg. the fragments; (d) hybridizing the fragments with single-stranded pattern polynucleotide and repeating steps (a)-(d). Steps (a)-(d) may be conducted simultaneously or wholly or partially sequentially. The **method** may be applied in the detection of a polynucleotide analyte in a sample suspected of contg. such analyte, e.g. bacteria. Also disclosed are compns. for conducting the **method**. Thus, target polynucleotide GTAAAACGACGGCCAGT was hybridized with an excess of complementary single-stranded pattern polynuclcotide (M13 mp19 DNA) contg. 2 nonidentical template sequences and then elongated with Klenow fragment polymerase and all 4 deoxynucleoside triphosphates. The elongated double-stranded DNA was cleaved by EcoRI, BamHI, and HindIII under polymerase reaction conditions (37.degree., 2 min), bioled for 5 min, cooled at 60.degree. for 10 min and 37.degree. for 5 min, fresh enzymes were added, and the cycle was repeated for a total of 4 cycles. Primary polynucleotide fragment, (21-mer or 30-mer) were obsd. after gel electrophoresis. No detectable bands were obsd. where target DNA was absent. Random initiation outside the template sequence can be prevented by using a template oligomer lacking 1 of the 4 nucleotide bases, and amplification in the absence of the nucleoside triphosphate corresponding to the missing base.

L36 ANSWER 2 OF 2 CA COPYRIGHT 1995 ACS
AN 107:3801 CA
TI Photoimmune detection of DNA and RNA
SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2

TI Aminoacyl derivatives of **nucleosides**, nucleotides, and **polynucleotides**. 11. **Synthesis** of 3'(2')-O-L-.alpha.-aspartyladenosine-**5'-phosphate**
SO Izv. Akad. Nauk SSSR, Ser. Khim. (1971), (8), 1736-40
CODEN: IASKA6
AU Tarusova, N. B.; Mazurova, V. V.; Kraevskii, A. A.; Gottikh, B. P.
PY 1971
AB The imidazolide **method** was used for the synthesis of 3'(2')-O-aspartyladenosine **5'-phosphate** starting with adenosine phosphate and the imidazolide of tert-butoxycarbonylaspartic acid tert-butyl ester. The structure of the product was confirmed by hydrolysis and ammonolysis, its stability at various pH levels in aq. soln. was detd. The hydrolysis was slow at pH range of 2-6.5, the rate increased with the pH at pH>6.5.

L33 ANSWER 6 OF 6 CA COPYRIGHT 1995 ACS
AN 75:98793 CA
TI Aminoacyl derivatives of **nucleosides**, nucleotides, and **polynucleotides**. 9. **Synthesis** and properties of 3'[2']-O-L-lysyl adenosine -**5'-phosphate** and 3'[2]-O-.epsilon.-aminocaproyl-adenosine-**5'-phosphate**
SO Izv. Akad. Nauk SSSR, Ser. Khim. (1971), (7), 1511-16
CODEN: IASKA6
AU Tarusova, N. B.; Kuznetsova, L. I.; Kraevskii, A. A.; Gottikh, B. P.
PY 1971
AB Condensation of the imiazolide of N-protected lysine with adenosine-**5'-phosphate** and cytidine-**5'-phosphate** with removal of the tert-butoxycarbonyl protective group gave 3'[2']-O-lysyladenosyl-**5'-phosphate** and corresponding cytidine deriv. The imidazole **method** was also used to prep. 3'[2']-O-.epsilon.-aminocaproyladenosine-**5'-phosphate** and 2'-O-.epsilon.-aminocapropyl-3',5'-cyclophosphate. The results indicated that prepn. of amino acid derivs. of 2'-deoxyadenylic acid gave much lower yields than were obtained for adenylic acid analogs. The products were characterized by Rf values.

```
=> s l26(l)(method# or technique#)
      1408736 METHOD#
       455939 TECHNIQUE#
L34       131 L26(L)(METHOD# OR TECHNIQUE#)

=> s l34 and (l30 or template(3w)polymerase# or terminal(3w)transferase#)
            1 L30
        15378 TEMPLATE
        47337 POLYMERASE#
          533 TEMPLATE(3W)POLYMERASE#
       123304 TERMINAL
        19785 TRANSFERASE#
          842 TERMINAL(3W)TRANSFERASE#
L35         2 L34 AND (L30 OR TEMPLATE(3W)POLYMERASE# OR TERMINAL(3W)TRA
              NSFERASE#)
```

phosphates with inorg. phosphate using 1,1'-carbonyldiimidazole as the activating agent. The 5'-diphosphate of each ox-red **nucleoside** (a **nucleoside** in the the C2'-C3' bond has been cleaved) was synthesized by oxidn. of the 2',3'-cis-diol groups in the 5'-diphosphates of adenosine, cytidine, guanosine, and uridine with NaIO4 followed by the redn. of the resulting dialdehydes with NaBH4. Similar conditions were also used to prep. the ox-red **nucleosides** as well as their **5'-phosphates** and **5'-triphosphates**. In a study of the capacity of modified nucleotides to add to a small oligoribonucleotide in the presence of polynucleotide phosphorylase, 2 classes of activity were exhibited: (1) the addn. of a few residues of the nucleotide as in the case of the diphosphates of ara-A, 2'-deoxynucleosides, and (under certain conditions) 2'-O-(.alpha.-methoxyethyl)**nucleosides**; (2) the addn. of only 1 nucleotide residue as in the case of the diphosphates of the ox-red **nucleosides** and 3'-deoxyadenosine. The activity displayed by the latter class may be of value as a **method** for the radioactive labeling of the 3'-terminal ends of polyribonucleotides and RNA.

L33 ANSWER 4 OF 6 CA COPYRIGHT 1995 ACS
AN 76:100009 CA
TI Aminoacyl derivatives of **nucleosides**, nucleotides, and **polynucleotides**. 12. **Synthesis** of 3'(2')-O-L-aminoacylnucleotides without preliminary protection of the amino group
SO Izv. Akad. Nauk SSSR, Ser. Khim. (1971), (11), 2529-35
CODEN: IASKA6
AU Gottikh, B. P.; Kraevskii, A. A.; Purygin, p. P.
PY 1971
AB Protonated amino acids react with **nucleoside 5'-phosphates** in the presence of N,N'-carbonyldiimidazole (I) in a new one-step synthesis of 3'(2')-O-aminoacylnucleotides. The formation of imidazolides and their condensation in aq. media is not accompanied by racemization. In a typical reaction trifluoroacetates of the desired amino acids treated with I in dry DMF until CO2 formation stopped, then treated with Na salt of the desired **nucleoside** phosphate in phosphate buffer at pH 7 for 5 hr at room temp. gave the desired 3'(2')-O-L-valylnucleoside **5'-phosphates**, from guanosine, uridine, and cytidine phosphates. Reactions run in org. media gave similar results. Also prepd. were the analogs with L-phenylalanyl residues and L-leucyl residues. Salicylidene derivs. of amino acids were prepd. from L- and D-valine and phenylalanine and used as ref. stds. for spectroscopic examn. of their Cu complexes to follow any racemization of the products in the syntheses, making use of activated forms of N-protonated amino acids. The **method** is based on detn. of CD const. and the degree of ellipticity of such Cu complexes.

L33 ANSWER 5 OF 6 CA COPYRIGHT 1995 ACS
AN 75:152031 CA

interference of the 8-Me group with 2'-CH2 than with 2'-CHOH, leading to a smaller population of syn structures in the deoxy chain and a consequent lower interference with homopolymer duplex formation. UV, CD, and IR spectra of the new polymer and its complexes are reported and related to structural and energetic characteristics of the mols. Since direct synthesis of 2-amino-8-methyldeoxyadenosine was not feasible, the corresponding riboside was prepd., the 3'- and 5'-positions were protected with a disilyloxy group, and a 2'-[(imidazol-1-yl)thiocarbonyl)] group was introduced. Redn. with tributyltin hydride followed by deprotection gave the **nucleoside**, which was then converted to the triphosphate by std. **methods**. The homopolymer was prepd. with terminal deoxynucleotidyltransferase.

L33 ANSWER 2 OF 6 CA COPYRIGHT 1995 ACS
AN 106:196737 CA
TI **Nucleoside** 3'-phosphoramidites
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
IN Kondo, Akihiro; Uchimura, Yuka; Kimizuka, Fusao; Ohayashi, Akira
AI JP 85-122555 850607
PI JP 61282396 A2 861212 Showa
PY 1986
AB The title compds. [I; B = (protected) purine or pyrimidine base residue; R = acid-sensitive protecting group; R1 = substituted amino, N-contg. heterocyclyl; R2, R3 = protecting group; R4 = H, protected OH], useful for the solid-phase **synthesis** of **polynucleotide 5'-phosphates** II [R5, R6 = H, protecting group; R7 = H, (protected) OH; R8 = H, COZCOY (Z = bond, aliph. biradical; Y = functional group of solid support], were prepd. Thus, phosphorylation of 3'-O-tert-butyldimethylsilyl-N-benzoylcytosine with p-nitrophenyl bis(benzotriazol-1-yl) phosphate followed by reaction with morpholine, desilylation with Bu4NF and phosphorylation with (Me2CH)2NPCl(OMe) gave I (R = morpholino, R1 = (Me2CH)2N, R2 = Me) (III). Polynucleotide **5'-phosphate** d(pCCTCGAGG) pXho linker and d(pGCTGCAGC)pPst linker were prepd. by the solid-phase **method** using III.

L33 ANSWER 3 OF 6 CA COPYRIGHT 1995 ACS
AN 90:35503 CA
TI Activity of polynucleotide phosphorylase with **nucleoside** diphosphates containing sugar ring modifications
SO Biochemistry (1978), 17(11), 2082-6
CODEN: BICHAW; ISSN: 0006-2960
AU Hawley, D. M.; Sninsky, J. J.; Bennett, G. N.; Gilham, P. T.
PY 1978
AB A no. of **nucleoside** 5'-diphosphates contg. modifications in their sugar rings were synthesized, and the capacity of these nucleotides to act as **substrates** for polynucleotide phosphorylase was examd. The 5'-diphosphates of 9-.beta.-D-arabinofuranosyladenine (ara-A) and 3'-deoxyadenosine were prepd. by phosphorylation of the **nucleosides** with POCl3 followed by condensation of the resulting **5'-**

```
L30             2 TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE?/CN

=> fil ca; s l29 and (l30 or template(3w)polymerase# or
terminal(3w)transferase#)
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             1 L30
         15378 TEMPLATE
         47337 POLYMERASE#
           533 TEMPLATE(3W)POLYMERASE#
        123304 TERMINAL
         19785 TRANSFERASE#
           842 TERMINAL(3W)TRANSFERASE#
L31            1 L29 AND (L30 OR TEMPLATE(3W)POLYMERASE# OR TERMINAL(3W)TRA
               NSFERASE#)

=> s l29 and (method# or technique#)
       1408736 METHOD#
        455939 TECHNIQUE#
L32            6 L29 AND (METHOD# OR TECHNIQUE#)

=> s l31 or l32
L33            6 L31 OR L32

=> d 1-6 .beverly

L33  ANSWER 1 OF 6  CA  COPYRIGHT 1995 ACS
AN   107:193251  CA
TI   Poly(2-amino-8-methyldeoxyadenylic acid):  contrasting effects in
     deoxy- and ribopolynucleotides of 2-amino and 8-methyl substituents
SO   Biochemistry (1987), 26(22), 7159-65
     CODEN: BICHAW; ISSN: 0006-2960
AU   Kanaya, Eiko Nakagawa; Howard, Frank B.; Frazier, Joe; Miles, H.
     Todd
PY   1987
AB   Poly(2-amino-8-methyldeoxyadenylic acid) interacts readily with
     pyrimidine polynucleotides to form double helixes only slightly less
     stable than those in which the purine polymer lacks the 8-Me group.
     By contrast, complexes formed with poly(2-amino-8-methyladenylic
     acid) are very strongly destabilized by the 8-Me group, despite a
     larger stabilizing effect of the 2-NH2 group in the ribo series.
     These results are interpreted in terms of a smaller steric
```

-key terms

```
L26        1121 (POLYNUCLEOTIDE# OR POLY NUCLEOTIDE#)(5A)(PROD? OR PREP? O
                R SYNTHES?)

=> s l26 and (substrate# or 3(1w)hydroxyl? or nucleoside#)
          416402 SUBSTRATE#
         3034153 3
          120379 HYDROXYL?
            2138 3(1W)HYDROXYL?
           29702 NUCLEOSIDE#
L28          284 L26 AND (SUBSTRATE# OR 3(1W)HYDROXYL? OR NUCLEOSIDE#)

=> s l28 and (5(1w)(triphosphate# or tri phosphate# or phosphate#))
         2844521 5
           19728 TRIPHOSPHATE#
           47490 TRI
          291376 PHOSPHATE#
              46 TRI PHOSPHATE#
                   (TRI(W)PHOSPHATE#)
          291376 PHOSPHATE#
           16070 5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHATE#)
L29           40 L28 AND (5(1W)(TRIPHOSPHATE# OR TRI PHOSPHATE# OR PHOSPHAT
                E#))

=> fil reg; e "template-independent polynucleotide polymerase"/cn 5
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DICTIONARY FILE UPDATES:  9 APR 95   HIGHEST RN 162059-89-4

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  conducting SmartSELECT searches.


E1            1     TEMPIDONE/CN
E2            1     TEMPIDORM/CN
E3            0 --> TEMPLATE-INDEPENDENT POLYNUCLEOTIDE POLYMERASE/CN
E4            1     TEMPLEN/CN
E5            1     TEMPLETINE/CN

=> e terminal deoxynucleotidyl transferase/cn 5
E1            1     TERMINAL CYTIDYLYLTRANSFERASE/CN
E2            1     TERMINAL DEOXYNUCLEOTIDE TRANSFERASE/CN
E3            0 --> TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE/CN
E4            1     TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE (BOVINE THYMUS C
                    LONE 8-1)/CN
E5            1     TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE (BOVINE THYMUS C
                    LONE PCR 3-4)/CN

=> s terminal deoxynucleotidyl transferase?/cn
```

Dwg. 0/10
ABEQ JP05504333 W UPAB: 931118
The glycopolypeptide multimer (A) comprises polypeptides.

One of the polypeptides has (a) an immunoglobulin (Ig) aminoacid residue sequence; and (b) an oligosaccharide comprising a core portion and N-acetylglucosamine (NAG)-contg. outer branches. (A) is free from sialic acid residues.

Pref. a compsn. comprises an encapsulated (A) comprising 2 polypeptides, one of which has an oligosaccharide comprising core and NAG-contg. outer branches; and an Ig sequence.

Prodn. comprises (a) introducing into the genome of a first member of a plant species a first mammalian gene (I) encoding an autogenously linking monomeric polypeptide having a N-linked glycosylation signal which is a constituent part of (A) to produce a first transformant, (b) introducing into the genome of a second member of the same plant species a second mammalian gene (II) encoding a second autogeneously linking monomeric polypeptide that is a constituent part of (A) to produce a second transformant; (c) generating a progeny population from the transformants, and (d) isolating a transgenic plant species that produces (A).

The transgenic plant comprises plant cells contg. autogenously linking polypeptide encoding mammalian genes; and at least autogenously linking polypeptides encoded by the genes and the polypeptides are associated with one another as a bioactive polypeptide multimer.

USE/ADVANTAGE - The transgenic plants may produce biologically or physiologically active mmultimeric proteins, e.g. abzymes, Igs or **enzymes**, in relatively high yields. Used for sepg. and/or concentrating a preselected ligand, e.g. metal ion, from a fluid e.g. a gas or liq.

FILE COVERS 1967 - 1 Apr 1995 (950401/ED) VOL 122 ISS 14

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```
  7936 POLYNUCLEOTIDE#
334370 POLY
156641 NUCLEOTIDE#
    33 POLY NUCLEOTIDE#
         (POLY(W)NUCLEOTIDE#)
1939760 PROD?
2520702 PREP?
 684061 SYNTHES?
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EP 497904 A1 920812 (9233) EN 152 pp
R: DE FR GB
US 5202422 A 930413 (9317) 44 pp
JP 05504333 W 930708 (9332) 152 pp
ADT EP 497904 A1 EP 90-917366 901025, WO 90-US6179 901025; US 5202422 A CIP of US 89-427765 891027, US 90-591823 901002; JP 05504333 W WO 90-US6179 901025, JP 91-500436 901025
FDT EP 497904 A1 Based on WO 9106320; JP 05504333 W Based on WO 9106320
PRAI US 89-427765 891027; US 90-591823 901002
AN 91-163960 [22] WPIDS
AB WO 9106320 A UPAB: 930928
A biologically active glycopolypeptide multimer (A) comprising at least two polypeptides is new. One of the polypeptides has (a) an immunoglobulin (Ig) amino acid residue sequence; and (b) an oligosaccharide comprising a core portion and N-acetylglucosamine (NAG)-contg. outer branches. (A) is free from sialic.acid residues.

Also claimed are: (1) a compsn. comprising an encapsulated (A) consisting of > 2 polypeptides, one of which has an oligosaccharide comprising core and a NAG-contg. outer branches; and an Ig sequence; (2) prodn. of (A) by (2) introducing into the genome of a first member of a plant species a first mammalian gene (I) encoding an autogenouslyy linking monomeric polypeptide having a N-linked gly-cosylation signal which is a constituent part of (A) to produce a first transformant, (b) introducing into the genome of a second member of the same plant species a second mammalian gene (II) encoding a second autogeneously linking monomeric polypeptide that is a constituent part of (A) to produce a second transformant; (c) generating a progeny population from the transformants, and (d) isolating a transgenic plant species that produces (A); (3) a transgenic plant comprising plant cells contg. plural autogenously linking polypeptide encoding mammalian genes; and at least autogenously linking polypeptides encoded by the genes, the polypeptides being associated with one another as a biologically active polypeptide multimer; (4) a method for making a transgenic plant as in (3); (5) a method for producing a heterodmermic antibody (Ab) and (6) a method for sepg. a metallic ion from a fluid sample contg. the ion.

USE/ADVANTAGE - The transgenic plants can produce biologically or physiologically active mmultimeric proteins, e.g. abzymes, Igs or **enzymes**, in relatively high yields. They can also be used as a means for sepg. and/or concentrating a preselected ligand, e.g. metal ion, from a fluid such as a gas or liquid.

0/10

ABEQ US 5202422 A UPAB: 931025
Compsn. comprising a glycopeptide multimer and plant material, where multimer comprises an immunogolically active glycosylated Ig molecule free of sialic acid residues. Plant material is palnt cell wall, organella, cytoplasm, protoplast, whole cell, intact plant, viable plant, plant leaf extract or homogenate or chlorophyll.

Also claimed is a glycopeptide multimer compsn. produced from a transgenic plant.

USE/ADVANTAGE - For inducing passive immunity against a preselected antigen in mammals.

platelet **enzyme** using [3H]pargyline. Headache patients with high and low monoamine oxidase specific activities relative to controls had turnover numbers very close to those for controls. Their specific activities vary because of differences in the concentration of active monoamine oxidase molecules, rather than differences in the ability of those **enzyme** molecules to **catalyze** the deamination reaction.

L25 ANSWER 3 OF 4 MEDLINE
AN 76039511 MEDLINE
TI Sulphation of p-hydroxyphenylpyruvic acid and related compounds by the rat liver cytosol.
AU Hext P M; **Rose F A**
SO Biochem J, (1975 Aug) 150 (2) .
Journal code: 9YO. ISSN: 0006-2936.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7602
AB Cytosol preparations of rat liver and kidney were examined for their ability to transfer sulphate from adenosine 3'-phosphate 5'-sulphatophosphate to p-hydroxyphenylpyruvic acid. Little activity towards this substrate was observed, and the main product detected in the reaction mixtures was identified as p-hydroxybenzyl alcohol O-sulphate. This was not formed from p-hydroxybenzaldehyde, a spontaneous oxidation product of p-hydroxyphenylpyruvic acid, by sulphation followed by a rapid **enzyme-catalysed** reduction of the intermediate phydroxybenzaldehyde O-sulphate. This product was formed mainly by this sequence of reactions, but the reverse, reduction followed by sulphation, also appeared possible. p-Hydroxybenzyl alcohol itself was very readily sulphated by both preparations, and the liver also produced a sulpho-conjugate of homogentisic acid. These observations are important in calculating the turnover of L-tyrosine O-sulphate in the mammalian system, and establish that p-hydroxyphenylpyruvic acid O-sulphate is an end product of its metabolism, rather than an intermediate in its synthesis by reversed transamination.

L25 ANSWER 4 OF 4 COPYRIGHT 1995 DERWENT INFORMATION LTD
AN 91-163960 [22] WPIDS
DNC C91-070945
TI Transgenic plants contg. glyco-polypeptide multimers - for producing passive immunity against pathogenic bacteria e.g. Shigella.
DC B04 C03 D16 J01
IN HAITT, A C; HEIN, M B; **HIATT, A C**; HEIN, M
PA (SCRI) SCRIPPS CLINIC & RES FOUND; (SCRI) SCRIPPS RES INST; (SCRI-N) SCRIPPS CLINIC & RE
CYC 17
PI WO 9106320 A 910516 (9122)*
RW: AT BE CH DE DK ES FR GB GR IT LU NL SE
W: AU CA JP
AU 9067532 A 910531 (9135)

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FILE 'WPIDS' ENTERED AT 12:45:26 ON 10 APR 95
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PROCESSING COMPLETED FOR L12
PROCESSING COMPLETED FOR L17
PROCESSING COMPLETED FOR L24
L25 4 DUP REM L12 L17 L24 (1 DUPLICATE REMOVED)

=> d 1-4 bib abs; fil ca; s (polynucleotide# or poly
nucleotide#)(5a)(prod? or prep? or synthes?)

L25 ANSWER 1 OF 4 MEDLINE
AN 90151145 MEDLINE
TI Sulphoconjugation and sulphohydrolysis.
AU Powell G M; White G F; Curtis C G; **Rose F A**
CS Department of Biochemistry, University of Wales College of Cardiff, U.K.
SO Drug Metabol Drug Interact, (1988) 6 (3-4) 203-17. Ref: 33
Journal code: DRM. ISSN: 0792-5077.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA English
FS Priority Journals
EM 9005
AB The formation of sulphoconjugates is a ubiquitous phenomenon and the addition of the sulphate moiety to a variety of endogenous and exogenous molecules dramatically alters their physico-chemical properties and also their biological functions. Large numbers of different types of sulphoconjugate exist and their formation is **catalysed** by the versatile sulphotransferases. An equally versatile family of **enzymes**, the sulphohydrolases exist that are capable of accomplishing the reverse reaction. This paper comprises an appraisal of sulphoconjugation and sulphohydrolysis in the metabolism of xenobiotics and addresses the wider issues of sulphur availability and the interplay between mammalian and microbial **enzyme** systems in the sulphate cycle.

L25 ANSWER 2 OF 4 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 1
AN 82:297582 BIOSIS
DN BA74:70062
TI PLATELET MONO AMINE OXIDASE EC-1.4.3.4 SPECIFIC ACTIVITY AND TURNOVER NUMBER IN HEAD ACHE.
AU SUMMERS K M; BROWN G K; CRAIG I W; LITTLEWOOD J; PEATFIELD R; GLOVER V; **ROSE F C**; SANDLER M
CS GENET. LAB., BIOCHEM. DEP., UNIV. OXFORD, S. PARKS RD., OXFORD OX1 3QU, UK.
SO CLIN CHIM ACTA 121 (2). 1982. 139-146. CODEN: CCATAR ISSN: 0009-8981
LA English
AB Monoamine oxidase turnover numbers (molecules of substrate converted to product per min per active site) were calculated for the human

```
>>> A THESAURUS IS AVAILABLE IN FIELD CT <<<

L18           1 HIATT A ?/AU


L19           0 ROSE F ?/AU

=> s l18 and (nucleotide# or polynucleotide# or enzym?)
          6149 NUCLEOTIDE#
           778 POLYNUCLEOTIDE#
         57215 ENZYM?
L20           0 L18 AND (NUCLEOTIDE# OR POLYNUCLEOTIDE# OR ENZYM?)

=> fil wpids; s l6; s l7
FILE 'WPIDS' ENTERED AT 12:44:40 ON 10 APR 95
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FILE LAST UPDATED: 04 APR 95                    <950404/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK              9513    <199513/DW>
DERWENT WEEK FOR CHEMICAL CODING:     9505
DERWENT WEEK FOR POLYMER INDEXING:    9509
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> DERWENT POLYMER INDEXING THESAURUS AVAILABLE IN FIELD /PLE <<<
     >>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<
>>> 7 MILLIONTH RECORD AWAITED FOR DW9514. PRIZE DRAW - SEE NEWS <<<
      >>> TIMELINESS OF UPDATING IMPROVED - SEE NEWS <<<


L21           2 HIATT A ?/AU


L22          17 ROSE F ?/AU

=> s l21 and l22; s (l21 or l22) and (nucleotide# or polynucleotide# or
enzym?)
L23           0 L21 AND L22


          5605 NUCLEOTIDE#
          1082 POLYNUCLEOTIDE#
         37514 ENZYM?
L24           1 (L21 OR L22) AND (NUCLEOTIDE# OR POLYNUCLEOTIDE# OR ENZYM?
                )

=> dup rem l12,l17,l24
DUPLICATE IS NOT AVAILABLE IN 'WPIDS'. ANSWERS FROM THESE FILES WILL BE
CONSIDERED UNIQUE
FILE 'BIOSIS' ENTERED AT 12:45:26 ON 10 APR 95
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```
        123824 NUCLEOTIDE#
          2876 POLYNUCLEOTIDE#
        466287 ENZYM?
L10         20 L9 AND (NUCLEOTIDE# OR POLYNUCLEOTIDE# OR ENZYM?)

=> d his l12; fil medl; s l6; s l7

     (FILE 'BIOSIS' ENTERED AT 12:40:24 ON 10 APR 95)
L12          1 S L10 AND CATALY?


FILE 'MEDLINE' ENTERED AT 12:43:02 ON 10 APR 95

 FILE LAST UPDATED: 7 APR 1995 (950407/UP).  FILE COVERS 1966 TO DATE.
 +QLF/CT SHOWS YOU THE ALLOWABLE QUALIFIERS OF A TERM.

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 "SCIENTIFIC MISCONDUCT-DATA TO BE REANALYZED."  ALL SUCH ANNOTATIONS
 HAVE BEEN REMOVED OR ARE BEING REMOVED.  WE APOLOGIZE FOR ANY PROBLEMS
 OR CONCERNS THIS MAY HAVE CAUSED.  USERS SHOULD DISREGARD THOSE PRIOR
 ANNOTATIONS.


L13          6 HIATT A ?/AU


L14        281 ROSE F ?/AU

=> s l13 and l14
L15          0 L13 AND L14

=> s (13 or l14) and (nucleotide# or polynucleotide# or enzym?)

SEARCH ENDED BY USER

=> s (l13 or l14) and (nucleotide# or polynucleotide# or enzym?)
        100512 NUCLEOTIDE#
          7730 POLYNUCLEOTIDE#
        610148 ENZYM?
L16         39 (L13 OR L14) AND (NUCLEOTIDE# OR POLYNUCLEOTIDE# OR ENZYM?
               )

=> s l16 and cataly?
         60450 CATALY?
L17          3 L16 AND CATALY?

=> fil biotechds; s l6; s l7
FILE 'BIOTECHDS' ENTERED AT 12:44:12 ON 10 APR 95
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```
E4            1      ROSE FRANCES/AU
E5            3      ROSE FRANCIS/AU
E6            2      ROSE FRANCIS EMILE EUGENE/AU
E7           21      ROSE FRANCIS L/AU
E8            6      ROSE FRANCIS LESLIE/AU
E9            1      ROSE FRANCIS LEWIS/AU
E10           1      ROSE FRANCIS M/AU
E11          10      ROSE FRANK/AU
E12          49      ROSE FRANK CLIFFORD/AU

=> s rose f/au; s l1 and l2
L2           15 ROSE F/AU


L3            0 L1 AND L2

=> s (l1 or l2) and ?nucleotide?
        183491 ?NUCLEOTIDE?
L4            0 (L1 OR L2) AND ?NUCLEOTIDE?

=> s (l1 or l2) and enzmy?
            10 ENZMY?
L5            0 (L1 OR L2) AND ENZMY?

=> fil biosi; s hiatt a ?/au; s rose f ?/au
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CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
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CAS REGISTRY NUMBERS (R) LAST ADDED: 4 April 1995 (950404/UP)

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more information enter HELP UPDATE and HELP COST at an arrow
prompt(=>).


L6           18 HIATT A ?/AU


L7          346 ROSE F ?/AU

=> s l6 and l7; s (l7 or l6)
L8            0 L6 AND L7


L9          364 (L7 OR L6)

=> s l9 and (nucleotide# or polynucleotide# or enzym?)
```

~~Examiner~~
300484

```
=> fil ca; e hiatt a/au
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FILE COVERS 1967 - 1 Apr 1995 (950401/ED)  VOL 122 ISS 14

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E1            1      HIASTALA M P/AU
E2            1      HIATE KUMIKO/AU
E3            4  --> HIATT A/AU
E4            1      HIATT A C/AU
E5            5      HIATT A J/AU
E6           31      HIATT ANDREW/AU
E7            3      HIATT ANDREW C/AU
E8            8      HIATT ANDREW J/AU
E9            1      HIATT B/AU
E10           1      HIATT C FRED/AU
E11           7      HIATT C W/AU
E12           1      HIATT CASPAR W/AU

=> s e3 or e4 or e6-e7; e rose f/au
              4 "HIATT A"/AU
              1 "HIATT A C"/AU
             31 "HIATT ANDREW"/AU
              3 "HIATT ANDREW C"/AU
L1           39 "HIATT A"/AU OR "HIATT A C"/AU OR ("HIATT ANDREW"/AU OR "H
                IATT ANDREW C"/AU)


E1            3      ROSE EVAN/AU
E2            2      ROSE EVELYN/AU
E3           15  --> ROSE F/AU
E4           22      ROSE F A/AU
E5           28      ROSE F CLIFFORD/AU
E6            1      ROSE F D/AU
E7            1      ROSE F G JR/AU
E8            2      ROSE F K/AU
E9           10      ROSE F L/AU
E10           1      ROSE F M/AU
E11           2      ROSE F ROBERTA/AU
E12           1      ROSE F W G/AU

=> e rose floyd/au
E1            1      ROSE F W G/AU
E2            2      ROSE FAINA V/AU
E3            0  --> ROSE FLOYD/AU
```

- Author(S)

residues, Cys227 and Cys234, has been controversial, and conflicting data have been published. To investigate the role of Cys227 the human terminal transferase cDNA was modified by site-directed mutagenesis to introduce a glycine codon at this position. Mutant and control wild-type human terminal transferase cDNAs had to be inserted into baculovirus genomes by homologous recombination and overexpressed in Trichoplusia ni insect larvae because terminal transferase cDNAs have not been successfully expressed in bacterial systems. The Cys227 .fwdarw. Gly mutant and wild-type enzymes displayed similar km values for both the nucleotide (dGTP) and DNA initiator (dA50) substrates. The kcat for the mutant enzyme (0.56 s-1) was comparable to that of the native enzyme (0.58 s-1). Additionally, **catalysis** by both mutant and wild-type enzymes was stimulated by Zn2+. These results together with the observation that the amino acid residue at position 234 is not conserved across species indicated that neither Cys234 nor Cys227 is an essential residue in the active site of terminal transferase.

L68 ANSWER 5 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS
AN 87:7649 BIOSIS
DN BA83:7649
TI PROPERTIES OF A SOLUBILIZED REPLICASE ISOLATED FROM CORN INFECTED WITH MAIZE DWARF MOSAIC VIRUS.
AU DONOFRIO J C; KUCHTA J; MOORE R; KACZMARCZYK W
CS PLANT SCI. DIV., P.O. BOX 6108, WEST VA. UNIV., MORGANTOWN, W. VA. 26506-6108, USA.
SO CAN J MICROBIOL 32 (8). 1986. 637-644. CODEN: CJMIAZ ISSN: 0008-4166
LA English
AB An RNA-dependent RNA polymerase (replicase) activity which **catalyzes** the polymerization of ribonucleotides into an acid-insoluble product has been isolated and solubilized from the leaves of maize dwarf mosaic virus infected maize. Glycerol gradient sedimentation of the replicase indicates a molecular mass of approximately 160,000 daltons. The majority of replicase activity resides in the 30,000 .times. g pellet. The Mg2+ optimum for the viral-associated replicase was determined to be 2.8 mM. The solubilized enzyme fraction exhibits characteristics similar to those reported for viral-induced replicase. The replicase requires all for ribonucleotides for maximum activity, is insensitive to added DNase, .alpha.-amanitin, rifampin, and exotoxin from Bacillus thuringiensis, is sensitive to added RNase, and is stimulated by added RNA. There was an increase in the incorporation of [3H]UMP when actinomycin D was omitted from the reaction mixture. Various species of RNA were effective as template. The enzyme showed approximately 30% activity when no exogenous template was added. Labeled nucleotides were incorporated into RNA at a linear rate by the replicase. The reaction products include a double-stranded partially RNase-resistant RNA. Sodium diethyldithiocarbamate stimulates template-dependent and to a lesser extent **template-independent** activity.

L68 ANSWER 6 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 4
AN 81:171185 BIOSIS
DN BA71:41177

protein confers a tighter binding of UTP(AmNS) to the low-K-d site. Forster's energy transfer measurements using UTP(AmNS) as the donor and rifampicin as the acceptor have been used for estimation of the distance of the i pyrimidine nucleotide site from the rifampicin site. From these measurements, we infer that there is no direct interference of rifampicin with the first **phosphodiester** bond between two pyrimidine nucleotides.

L68 ANSWER 3 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 2
AN 95:62171 BIOSIS
DN 98076471
TI Production of RNA by a polymerase protein encapsulated within phospholipid vesicles.
AU Chakrabarti A C; Breaker R R; Joyce G F; Deamer D W
CS Dep. Chem. Biochemistry, Univ. California, Santa Cruz, Santa Cruz, CA 95064, USA
SO Journal of Molecular Evolution 39 (6). 1994. 555-559. ISSN: 0022-2844
LA English
AB **Catalyzed** polymerization reactions represent a primary anabolic activity of all cells. It can assumed that early cells carried out such reactions, i which macromolecular **catalysts** were encapsulated within some type of boundary membrane. In the experiments described here, we show that a **template-independent** RNA polymerase (polynucleotide phosphorylase) can be encapsulated in dimyristoyl phosphatidylcholine vesicles without substrate. When the substrate adenosine diphosphate (ADP) was provided externally, long-chain RNA polymers were synthesized within the vesicles. Substrate flux was maximized by maintaining the vesicles at the phase transition temperature of the component lipid. A protease was introduced externally as an additional control. Free enzyme was inactivated under identical conditions. RNA products were visualized in situ by ethidium bromide fluorescence. The products were harvested from the liposomes, radiolabeled, and analyzed by polyacrylamide gel electrophoresis. Encapsulated **catalysts** represent a model for primitive cellular systems in which an RNA polymerase was entrapped within a protected microenvironment.

L68 ANSWER 4 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS DUPLICATE 3
AN 92:233881 BIOSIS
DN BA93:121906
TI LACK OF FUNCTIONAL SIGNIFICANCE OF CYS-227 AND CYS-234 IN TERMINAL DEOXYNUCLEOTIDYLTRANSFERASE.
AU MEDIN J A; COLEMAN M S
CS DEP. BIOCHEM. BIOPHYSICS, UNIV. NORTH CAROLINA CHAPEL HILL, N.C. 27599-7260.
SO J BIOL CHEM 267 (8). 1992. 5199-5201. CODEN: JBCHA3 ISSN: 0021-9258
LA English
AB Identification of the three functional regions (**catalytic**, nucleotide substrate-binding, DNA substrate-binding) of the monofunctional **template independent** DNA polymerase terminal deoxynucleotidyltransferase has not been completely established. The potential participation of 2 amino acid

sequences with homology to a Cys-4 metal binding motif, CYS-X-2-CYS-X-17-CYS-X2-Cys. The zinc content of the 63 kDa gene 4 protein is 1.1 g-atom/mol protein, while the zinc content of the 56 kDa gene 4 protein is lt 0.01, as determined by atomic absorption spectrometry. A bacteriophage deleted for gene 4, T7 DELTA-4-1, is incapable of growing on Escherichia coli strains that contain plasmids expressing gene 4 proteins with single amino acid substitutions of Ser at each of the four conserved Cys residues (efficiency of plating, 10-7). Primase containing a substitution of the third Cys for Ser has been overexpressed in E. coli and purified to homogeneity. This mutant primase cannot **catalyze** template directed synthesis of oligoribonucleotides although it is able to **catalyze** the synthesis of random diribonucleotides in a **template-independent** fashion. The mutant primase has reduced helicase activity although it **catalyzes** single-stranded DNA-dependent hydrolysis of dTTP at rates comparable with wild type primase. The zinc content of the mutant primase is 0.5 g-atom/mol protein.

L68 ANSWER 2 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS
AN 94:545286 BIOSIS
DN 98004834
TI Evidence for a pyrimidine-nucleotide-specific initiation site (the i site) on Escherichia coli RNA polymerase: Proximity relationship with the inhibitor binding domain.
AU Reddy P S; Chatterji D
CS Cent. Cell. Mol. Biol., Uppal Rd., Hyderabad 500 007, India
SO European Journal of Biochemistry 225 (2). 1994. 737-745. ISSN: 0014-2956
LA English
AB Escherichia coli RNA polymerase has two sites, the i and i + 1. for the binding of the first two substrates. The i site is template- and Mg-2+-independent and purine-nucleotide-specific, whereas the i+1 site is template- and Mg-2+-dependent and shows no nucleotide preference. The specificity of the i site for purine nucleotides is well in accord with the fact that most promoters initiate with a purine nucleotide. But there are a few promoters that initiate with a pyrimidine nucleotide. Dinucleotide synthesis at these promoters is completely inhibited by rifampicin. Earlier studies have failed to identify an i site for pyrimidine nucleotides. In this paper, using a fluorescent analog of UTP, namely uridine 5'-(gamma-(5-sulfonic acid)naphthylamidate)-triphosphate, abbreviated as UTP(AmNS), we are able to show its binding to RNA polymerase, with a K-d of 0.8 mu-M, in the absence of Mg" and template. This suggests the presence of an i pyrimidine nucleotide site. The fact that UTP(AmNS) is capable of initiating RNA synthesis from the i site is further evidenced by the abortive transcription analyses at the lac promoter. Fluorescence titration studies performed in the presence and absence of purine initiator molecules indicate that this site is different from the i purine site. Scatchard analysis of the above data indicates the presence of a single binding site for UTP(AmNS) in the absence of Mg-2+. Moreover UTP(AmNS) binds to the core enzyme with a K-d of 3.0 mu-M implying that, unlike the i purine nucleotide site, the a

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          8729 TEMPLATE
         60219 INDEPENDENT
             1 TEMPLATE INDEPENDENT
               (TEMPLATE(W)INDEPENDENT)
           108 PHOSPHODIESTER#
          2569 PHOSPHO
          5554 DIESTER#
        211344 DI
        159988 ESTER#
          2532 DI ESTER#
               (DI(W)ESTER#)
            30 PHOSPHO(W)(DIESTER# OR DI ESTER#)
        204502 CATALY?
L67          0 L63 AND (PHOSPHODIESTER# OR PHOSPHO(W)(DIESTER# OR DI ESTE
               R#) OR CATALY?)

=> dup rem l62,l65
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FILE 'MEDLINE' ENTERED AT 13:26:07 ON 10 APR 95
PROCESSING COMPLETED FOR L62
PROCESSING COMPLETED FOR L65
L68          11 DUP REM L62 L65 (5 DUPLICATES REMOVED)

=> d 1-11 bib abs; fil hom

L68  ANSWER 1 OF 11  BIOSIS  COPYRIGHT 1995 BIOSIS     DUPLICATE 1
AN  94:482267  BIOSIS
DN  97495267
TI  Requirement for a zinc motif for template recognition by the
    bacteriophage T7 primase.
AU  Mendelman L V; Beauchamp B B; Richardson C C
CS  Dep. Biological Chem. Molecular Pharmacology, Harvard Univ. Med.
    Sch., Boston, MA 02115, USA
SO  EMBO (European Molecular Biology Organization) Journal 13 (16). 1994.
    3909-3916. ISSN: 0261-4189
LA  English
AB  Gene 4 of bacteriophage T7 encodes two proteins, a 63 kDa and a
    collinear 56 kDa protein. The coding sequence of the 56 kDa protein
    begins at the residues encoding an internal methionine located 64
    amino acids from the N-terminus of the 63 kDa protein. The 56 kDa
    gene 4 protein is a helicase and the 63 kDa gene 4 protein is a
    helicase and a primase. The unique 7 kDa N-terminus of the 63 kDa
    gene 4 protein is essential for primer synthesis and contains
```

```
                (TEMPLATE(W)INDEPENDENT)

=> s l63 and (phosphodiester# or phospho(w)(diester# or di ester#) or
cataly?)
          1720 PHOSPHODIESTER#
          1702 PHOSPHO
          5767 DIESTER#
        795962 DI
         48826 ESTER#
            23 DI ESTER#
                 (DI(W)ESTER#)
             1 PHOSPHO(W)(DIESTER# OR DI ESTER#)
         60450 CATALY?
L64          6 L63 AND (PHOSPHODIESTER# OR PHOSPHO(W)(DIESTER# OR DI ESTE
               R#) OR CATALY?)

=> s l64 not (l17 or l41 or l52); fil biotechds; s l64
L65          6 L64 NOT (L17 OR L41 OR L52)


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          1253 TEMPLATE
          2448 INDEPENDENT
             5 TEMPLATE INDEPENDENT
                 (TEMPLATE(W)INDEPENDENT)
           152 PHOSPHODIESTER#
           110 PHOSPHO
           255 DIESTER#
           954 DI
          7637 ESTER#
             3 DI ESTER#
                 (DI(W)ESTER#)
             0 PHOSPHO(W)(DIESTER# OR DI ESTER#)
          8563 CATALY?
L66          0 L63 AND (PHOSPHODIESTER# OR PHOSPHO(W)(DIESTER# OR DI ESTE
               R#) OR CATALY?)

=> fil wpids; s l64
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FILE LAST UPDATED: 04 APR 95                <950404/UP>
>>>UPDATE WEEKS:
MOST RECENT DERWENT WEEK            9513    <199513/DW>
DERWENT WEEK FOR CHEMICAL CODING:   9505
DERWENT WEEK FOR POLYMER INDEXING:  9509
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CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

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CAS REGISTRY NUMBERS (R) LAST ADDED: 4 April 1995 (950404/UP)

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more information enter HELP UPDATE and HELP COST at an arrow
prompt(=>).


          9724 TEMPLATE
        118244 INDEPENDENT
L59          41 TEMPLATE INDEPENDENT
                  (TEMPLATE(W)INDEPENDENT)

=> s l59 and (phosphodiester# or phospho(w)(diester# or di ester#))
          1902 PHOSPHODIESTER#
         54261 PHOSPHO
          1664 DIESTER#
        191971 DI
         66079 ESTER#
           535 DI ESTER#
                  (DI(W)ESTER#)
           220 PHOSPHO(W)(DIESTER# OR DI ESTER#)
L60          1 L59 AND (PHOSPHODIESTER# OR PHOSPHO(W)(DIESTER# OR DI ESTE
                  R#))

=> s l59 and cataly?
         78877 CATALY?
L61          9 L59 AND CATALY?

=> s (l60 or l61) not (l12 or l39); fil medl; s l59
L62         10 (L60 OR L61) NOT (L12 OR L39)


FILE 'MEDLINE' ENTERED AT 13:24:34 ON 10 APR 95

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 ANNOTATIONS.


          8269 TEMPLATE
        101745 INDEPENDENT
L63          37 TEMPLATE INDEPENDENT
```

F.; Potapov, V. A.; Romashchenko, A. G.; Yushkova, L. F.; Salganik, R. I.
PY 1976
AB An enzyme **catalyzing template-independent** synthesis of polydeoxynucleotides from deoxynucleoside diphosphates was sepd. from E. coli DNA polymerase I by DEAE-cellulose chromatog. and ultrafiltration through an M-50 Amicon filter. Ultrafiltration data indicated that the mol. wt. of this enzyme was <50,000. The enzyme did not utilize deoxynucleoside triphosphates or ribonucleoside di- or triphosphates for the polymn. reaction. The lag period for the polymn. varied from 2 to 20 h. The reaction was activated by Mg2+ and the pH optimum was 8.5. The optimal concn. of deoxyribonucleoside diphosphate was 10-3M; further increase in concn. resulted in strong inhibitory effects. This enzyme was designated as deoxyribonucleoside diphosphate:oligonucleotide deoxyribonucleotidyltransferase.

L58 ANSWER 11 OF 11 CA COPYRIGHT 1995 ACS
AN 83:2866 CA
TI Purification and some properties of peptide initiation factors from rat liver
SO Acta Biol. Med. Ger. (1974), 33(5-6), 905-12
CODEN: ABMGAJ
AU Hradec, J.; Pohlreich, P.; Dusek, Z.; Grosdanovic, J.
PY 1974
AB Initiation factors (IF-1 and IF-3) were isolated from rat liver and their properties studied. IF-1 bound initiator methionyl-tRNA or the model initiator N-acetylphenylalanyl-tRNA to 40 S ribosomal subunits or monoribosomes from rat liver. Sephadex G-200 chromatog. gave a mol. wt. of .apprx.220,000. The binding reaction **catalyzed** by this factor was **template independent** and linear at 37.degree.. Mg2+, K+, and GTP stimulated the binding of the initiator tRNA. The larger ribosomal subunit enhanced the factor-dependent binding. IF-3 was purified .apprx.100-fold by affinity chromatog. on poly(A)-Sepharose, suggesting that poly(A) serves as a recognition site for IF-3. Na dodecyl sulfate-polyacrylamide electrophoresis of IF-3 gave 3 closely adjacent bands of mol. wt. .apprx.11,000. This factor stimulated the translation of mRNA from rat liver and **catalyzed** the binding of mRNA to the monoribosomes. The reaction was stimulated in the presence of IF-1. Binding of mRNA and initiator tRNA to the 40 S subunit in the presence of both factors was enhanced by the addn. of the 60 S subunit in the presence of both factors was enhanced by the addn. of the 60 S subunit. Apparently, both initiation factors are required for the formation of the natural initiation complex. The purifn. and mol. wt. of IF-3 is discussed.

FILE 'BIOSIS' ENTERED AT 13:23:04 ON 10 APR 95

FILE COVERS 1969 TO DATE.

AN 86:67089 CA
TI Purification and properties of a Met-tRNAf binding factor from wheat germ
SO Arch. Biochem. Biophys. (1977), 178(2), 565-75
CODEN: ABBIA4
AU Spremulli, Linda L.; Walthall, Ben J.; Lax, Sandra R.; Ravel, Joanne M.
PY 1977
AB The 40-60% (NH4)2SO4 fraction of the postribosomal supernatant of wheat germ **catalyzed** the binding of formylatable methionyl-tRNAf (Met-tRNAf) to 40 S ribosomal subunits, and in addn., interacted with Met-tRNAf in the absence of 40 S ribosomal subunits and Mg2+ to form a complex that was retained on a Millipore filter. On chromatog. on DEAE-cellulose, 2 fractions having this latter activity were obtained, a 0.05M KCl fraction and a 0.12M KCl fraction. The 0.12M KCl fraction, but not the 0.05 M KCl fraction, also contained the factor that **catalyzed** the binding of Met-tRNAf to 40 S ribosomal subunits. When the 0.12M KCl fraction from DEAE-cellulose was subjected to chromatog. on Sephadex G-200 and on phosphocellulose, both activities copurified and both were purified >300-fold. In addn., both activities had similar heat-inactivation profiles. The formation of a complex between the factor and Met-tRNAf in the absence of 40 S subunits was stimulated 3- to 4-fold by GTP and was inhibited by GDP. Ternary complex formation was specific for Met-tRNAf and was decreased in the presence of Mg2+. The binding of Met-tRNAf to 40 S subunits was stimulated 3- to 4-fold by pApUpG. When pApUpG was present, omission of GTP reduced the amt. of Met-tRNAf bound by only .apprx.30%. The factor **catalyzed** the binding of nonformylatable Met-tRNA (Met-tRNAm) to 40 S subunits .apprx.1/5th as well as Met-tRNAf and **catalyzed** the poly(U)-directed binding of phenylalanyl-tRNA (Phe-tRNA) by .apprx.50% as well. The binding of Met-tRNAf to 40 S subunits that occurs in the absence of template is GTP-dependent, being reduced >90% by the omission of GTP. No detectable binding of Phe-tRNA to 40 S subunits was obsd. in the absence of poly(U), indicating that **template-independent** binding is specific for Met-tRNAf. Both ternary complex formation and **template-independent** binding of Met-tRNAf to 40 S subunits were reduced >90% by treatment of the enzyme with N-ethylmaleimide. However, binding of Met-tRNAf to 40 S subunits in the presence of pApUpG was not affected by treatment of the enzyme with N-ethylmaleimide. In wheat germ, Met-tRNAf-binding activities may reside in a single oligomeric protein.

L58 ANSWER 10 OF 11 CA COPYRIGHT 1995 ACS
AN 86:39193 CA
TI Isolation of the enzyme which **catalyzes** the polymerization of deoxyribonucleoside diphosphates from preparations of Escherichia coli DNA-polymerase I
SO Mol. Biol. (Moscow) (1976), 10(6), 1231-7
CODEN: MOBIBO
AU Nazarenko, I. A.; Belyaeva, T. A.; Vorob'eva, N. V.; Nekhanevich, I.

polydeoxyribonucleotide chains for .apprx.40 nucleotide residues was achieved using nondenatured DNA and TTP-3H as primer and substrate, resp. Thus, I isolated from wheat germ shared **catalytic** properties with I of mammalian thymus, but differed in preferring nondenatured to single-stranded DNA as primer and requiring both Mg2+ and Mn2+ for max. activity.

L58 ANSWER 7 OF 11 CA COPYRIGHT 1995 ACS
AN 91:1838 CA
TI Addition of oligonucleotides to the 5'-terminus of DNA by T4 RNA ligase
SO Nucleic Acids Res. (1979), 6(3), 1013-24
CODEN: NARHAD; ISSN: 0305-1048
AU Higgins, N. Patrick; Geballe, Adam P.; Cozzarelli, Nicholas R.
PY 1979
AB Bacteriophage T4-induced RNA ligase **catalyzed** the controlled **template-independent** addn. of RNA to the 5'-phosphoryl end of large DNA mols. Restriction enzyme-generated fragments of ColE1 DNA with completely base-paired or cohesive ends and linear single-stranded .vphi.X174 viral DNA were all good substrates. DNA mols. from 10- to 6000-nucleotides long were quant. joined in 1 h to a no. of different RNA homopolymers. The most efficient of these was A(pA)5; I(pI)5 and C(pC)5 were also utilized, but U(pU)5 was not. The optimum ribohomopolymer length was 6 nucleotides. Joining of ribohomopolymers between 10- and 20-nucleotides long occurred at .apprx.1/2 the max. rate and a trimer was the shortest substrate. Thus, RNA ligase generates extensions of predetd. length and base compn. at the 5' end of large DNA mols.

L58 ANSWER 8 OF 11 CA COPYRIGHT 1995 ACS
AN 88:85068 CA
TI A **template independent**, rifampicin sensitive poly(A).poly(U) synthesizing activity present in Bacillus subtilis
SO Biochem. Biophys. Res. Commun. (1978), 80(2), 349-54
CODEN: BBRCA9; ISSN: 0006-291X
AU Halling, Shirley M.; Doi, Roy H.
PY 1978
AB A **template-independent** poly (A).cntdot.poly (U)-synthesizing activity was isolated from B. subtilis. This activity was eluted from a DNA-cellulose column along with DNA-dependent RNA polymerase (I). The column fractions which exhibited this activity contained holo-I plus a polypeptide which was slightly larger than .sigma. factor; pure holo-I did not synthesize poly (A).cntdot.poly (U). The activity was dependent on the presence of ATP, UTP, and Mn2+ (Mg2+ could not substitute), and was inhibited by rifampicin, streptolydigin, and Cibacron Blue. The incorporation of nucleotides was not linear with time, but appeared after a lag period. The results suggest that a modified form of I analogous to Escherichia coli holoenzyme II is **catalyzing** the synthesis of poly (A).cntdot.poly (U).

L58 ANSWER 9 OF 11 CA COPYRIGHT 1995 ACS

relatively small data set. The anal. reveals some limitations of the model of irreversible polymn.; these limitations have not been obvious previously. For example, the initiation rate const. is not attainable from simple monomer incorporation data. Reliable rate consts. can be obtained with minimal time course studies.

L58 ANSWER 5 OF 11 CA COPYRIGHT 1995 ACS
AN 105:167680 CA
TI Properties of a solubilized replicase isolated from corn infected with maize dwarf mosaic virus
SO Can. J. Microbiol. (1986), 32(8), 637-44
CODEN: CJMIAZ; ISSN: 0008-4166
AU Donofrio, J. C.; Kuchta, J.; Moore, R.; Kaczmarczyk, W.
PY 1986
AB An RNA-dependent RNA polymerase (replicase) activity which **catalyzes** the polymn. of ribonucleotides into an acid-insol. product has been isolated and solubilized from the leaves of maize dwarf mosaic virus-infected maize. Glycerol gradient sedimentation of the replicase indicates a mol. mass of .apprx.160,000 daltons. The majority of replicase activity resides in the 30,000-g pellet. The Mg2+ optimum for the viral-assocd. replicase was 2.8 mM. The solubilized enzyme fraction exhibits characteristics similar to those reported for viral-induced replicase. The replicase requires all 4 ribonucleotides for max. activity, is insensitive to added DNase, .alpha.-amanitin, rifampin, and exotoxin from Bacillus thuringiensis, is sensitive to added RNase, and is stimulated by added RNA. There was and increase in the incorporation of [3H]UMP when actinomycin D was omitted from the reaction mixt. Various species of RNA were effective as template. The enzyme showed .apprx.30% activity when no exogenous template was added. Labeled nucleotides were incorporated into RNA at a linear rate by the replicase. The reaction products include a double-stranded partially RNase-resistant RNA. Na diethyldithiocarbamate stimulates template-dependent and to a lesser extent **template-independent** activity.

L58 ANSWER 6 OF 11 CA COPYRIGHT 1995 ACS
AN 94:43070 CA
TI Properties of a terminal deoxyribonucleotidyltransferase isolated from wheat germ
SO Biochem. J. (1980), 191(1), 139-45
CODEN: BIJOAK; ISSN: 0306-3275
AU Brodniewicz-Proba, Teresa; Buchowicz, Jerzy
PY 1980
AB A terminal deoxyribonucleotidyltransferase (EC 2.7.7.31) (I) able to **catalyze** deoxyribonucleotide polymn. in a **template-independent** manner was isolated from dry wheat germ. I activity was assocd. with a sol. protein which was homogeneous with respect to mol. wt. (.apprx.500,000) and dissocd. into 2 products of mol. wt. 67,000 and 45,000. I-**catalyzed** polymn. could be primed by oligo- as well as polydeoxyribonucleotides and was very efficient (234 nmol/h/mg) when only 1 of the 4 deoxyribonucleoside 5'-triphosphates was present. An extension of the 3'-OH termini of

able to **catalyze** the synthesis of random diribonucleotides in a **template-independent** fashion. The mutant primase had reduced helicase activity although it **catalyzed** single-stranded DNA-dependent hydrolysis of dTTP at rates comparable with wild-type primase. The Zn content of the mutant primase was 0.5 g-atom/mol protein.

L58 ANSWER 3 OF 11 CA COPYRIGHT 1995 ACS
AN 116:190148 CA
TI Lack of functional significance of Cys227 and Cys234 in terminal deoxynucleotidyltransferase
SO J. Biol. Chem. (1992), 267(8), 5199-201
CODEN: JBCHA3; ISSN: 0021-9258
AU Medin, Jeffrey A.; Coleman, Mary Sue
PY 1992
AB The identification of the 3 functional regions (**catalytic**, nucleotide substrate-binding, DNA substrate-binding) of the monofunctional **template-independent** terminal deoxynucleotidyltransferase (I) has not been completely established. The potential participation of 2 amino acid residues, Cys-227 and Cys-234, has been controversial, and conflicting data have been published. To investigate the role of Cys-227, human I cDNA was modified by site-directed mutagenesis to introduce a glycine codon at this position. Mutant and control wild-type human I cDNAs were inserted into baculovirus genomes by homologous recombination and overexpressed in Trichoplusia ni insect larvae because I cDNAs have not been successfully expressed in bacterial systems. The Cys-227 .fwdarw. Gly mutant and wild-type enzymes displayed similar Km values for both the nucleotide (dGTP) and DNA initiator (dA50) substrates. The kcat for mutant I (0.56 s-1) was comparable to that of native I (0.58 s-1). Addnl., **catalysis** by both mutant and wild-type enzymes was stimulated by Zn2+. These results together with the observation that the amino acid residue at position 234 is not conserved across species indicated that neither Cys-234 nor Cys-227 is an essential residue in the active site of I.

L58 ANSWER 4 OF 11 CA COPYRIGHT 1995 ACS
AN 115:130574 CA
TI Determining rate constants for irreversible polymerization where the initial step and propagation steps have different rate constants: consideration of polyadenylate polymerase
SO J. Theor. Biol. (1991), 150(4), 529-37
CODEN: JTBIAP; ISSN: 0022-5193
AU Cohen, Robert J.
PY 1991
AB A new relationship is derived between the amt. of monomer incorporated and the amt. of initiated primer in an irreversible polymn. where the first step, initiation, has a rate const. differing from the elongation rate consts. It is valid for template-directed and **template-independent** polymn. **catalyzed** by poly (A) polymerase (EC 2.7.7.19). This relationship can be used in kinetic simulation. It suggests a simpler curve-fitting technique to attain rate consts. from a

TI Production of RNA by a polymerase protein encapsulated within phospholipid vesicles
SO J. Mol. Evol. (1994), 39(6), 555-9
CODEN: JMEVAU; ISSN: 0022-2844
AU Chakrabarti, Ajoy C.; Breaker, Ronald R.; Joyce, Gerald F.; Deamer, David W.
PY 1994
AB **Catalyzed** polymn. reactions represent a primary anabolic activity of all cells. It can be assumed that early cells carried out such reactions, in which macromol. **catalysts** were encapsulated within some type of boundary membrane. In the expts. described here, the authors show that a **template-independent** RNA polymerase (polynucleotide phosphorylase) can be encapsulated in dimyristoyl phosphatidylcholine vesicles without substrate. When the substrate ADP was provided externally, long-chain RNA polymers were synthesized within the vesicles. Substrate flux was maximized by maintaining the vesicles at the phase transition temp. of the component lipid. A protease was introduced externally as an addnl. control. Free enzyme was inactivated under identical conditions. RNA products were visualized in situ by ethidium bromide fluorescence. The products were harvested from the liposomes, radiolabeled, and analyzed by PAGE. Encapsulated **catalysts** represent a model for primitive cellular systems in which an RNA polymerase was entrapped within a protected microenvironment.

L58 ANSWER 2 OF 11 CA COPYRIGHT 1995 ACS
AN 121:295881 CA
TI Requirement for a zinc motif for template recognition by the bacteriophage T7 primase
SO EMBO J. (1994), 13(16), 3909-16
CODEN: EMJODG; ISSN: 0261-4189
AU Mendelman, Lynn V.; Beauchamp, Benjamin B.; Richardson, Charles C.
PY 1994
AB Gene 4 of phage T7 encodes 2 proteins, a 63-kDa protein and a collinear 56-kDa protein. The coding sequence of the 56-kDa protein begins at the residues encoding an internal Met located 64 amino acids from the N-terminus of the 63-kDa protein. The 56-kDa gene 4 protein is a DNA helicase and the 63-kDa gene 4 protein is both a DNA helicase and a DNA primase. The unique 7-kDa N-terminus of the 63-kDa gene 4 protein is essential for primer synthesis and contains sequences with homol. to a Cys4 metal-binding motif, Cys-X2-Cys-X17-Cys-X2-Cys. The Zn content of the 63-kDa gene 4 protein was 1.1 g-atom/mol protein, whereas the Zn content of the 56-kDa gene 4 protein was <0.01, as detd. by at. absorption spectrometry. A phage T7 deleted for gene 4, T7 .DELTA.4-1, was incapable of growing on Escherichia coli strains that contained plasmids expressing gene 4 proteins with single amino acid substitutions of Ser at each of the 4 conserved Cys residues (efficiency of plating, 10-7). DNA primase contg. a substitution of the 3rd Cys for Ser was overexpressed in E. coli and purified to homogeneity. This mutant primase could not **catalyze** template-directed synthesis of oligoribonucleotides although it was

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DICTIONARY FILE UPDATES:  9 APR 95   HIGHEST RN 162059-89-4

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            12 PHOSPHO(W)(DIESTER# OR DI ESTER#)
L56          0 L55 AND (PHOSPHODIESTER# OR PHOSPHO(W)(DIESTER# OR DI ESTE
                 R#))

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        582883 CATALY?
L57         11 L55 AND CATALY?

=> s l57 not (l33 or l36)
L58         11 L57 NOT (L33 OR L36)

=> d 1-11 .beverly; fil biosi; s template independent

L58  ANSWER 1 OF 11  CA  COPYRIGHT 1995 ACS
AN   122:49630  CA
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TI Physical and coding properties of poly(5-aminouridylic acid) and of 5-aminouridine-containing trinucleotides.
AU Hillen W; Gassen H G
SO Biochim Biophys Acta, (1975 Oct 15) 407 (3) 347-56.
Journal code: A0W.
AB This report concerns the synthesis of poly(5-aminouridylic acid) and of 5-aminouridine-containing trinucleotides. Starting from 5-aminouridine the **nucleoside 5'-phosphate** was prepared enzymatically with carrot phosphotransferase whereas the **nucleoside** 5'-diphosphate was **prepared** chemically and polymerised with **polynucleotide** phosphorylase. The aminouridine-containing trinucleotides were prepared by known enzymatic procedures. Besides an increase of stability in the secondary structure poly(nh25U) forms a triple-stranded complex with poly(A) and stimulates the poly(Phe) synthesis like poly(U). In contrast to U-nh25U-U, the triplet containing the 3'-terminal aminouridine does not stimulate the binding of Phe-tRNA to 70-S ribosomes. This behavior is discussed with respect to the influence of a modification on the stacking geometry of a codon and the base pairing scheme between the 5'-nucleotide of the anticodon and the 3'-nucleotide of the condon.

L52 ANSWER 11 OF 11 MEDLINE
AN 75013628 MEDLINE
TI **Polynucleotides.** 23. A **synthesis** of ribodinucleoside monophosphates using **nucleoside 5'-phosphates.**
AU Otsuka E; Nakamura S; Yoneda M; Ikehara M
SO Nucleic Acids Res, (1974 Feb) 1 (2) 323-9.
Journal code: O8L.

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FILE COVERS 1967 - 1 Apr 1995 (950401/ED) VOL 122 ISS 14

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3'-terminus of the chain allows the synthesis of oligomers possessing monophosphate groups at either end or both ends. Furthermore, oligonucleotide intermediates possessing a 5'-5'-linked uridine terminal are shown to have a special application as acceptors in RNA ligase reactions, where the presence of the ribonucleoside cap on the **5'-phosphate** limits ligation specifically to the 3'-ends of the oligomers. Removal of the uridine residues to expose free **5'-phosphates** would then enable the products to participate as donors in further elongation reactions.

L52 ANSWER 8 OF 11 MEDLINE
AN 84203628 MEDLINE
TI **Preparation** of ligation intermediates and related **polynucleotide** pyrophosphates.
AU Chu B C; Orgel L E
SO Biochim Biophys Acta, (1984 May 15) 782 (1) 103-5.
Journal code: A0W. ISSN: 0006-3002.
AB Unprotected oligonucleotides and oligodeoxynucleotides terminated with an unhindered **5'-phosphate** group react with **nucleoside** 5'- phosphorimidazolides in aqueous solution to give 'capped' pyrophosphates in at least 70% yield. If adenosine 5'-phosphorimidazolide is used as a **substrate** in the reaction, ligase intermediates are obtained as products.

L52 ANSWER 9 OF 11 MEDLINE
AN 83238454 MEDLINE
TI Enzymatic mechanism of an RNA ligase from wheat germ.
AU Schwartz R C; Greer C L; Gegenheimer P; Abelson J
SO J Biol Chem, (1983 Jul 10) 258 (13) 8374-83.
Journal code: HIV. ISSN: 0021-9258.
AB We have characterized the mechanism of action of a wheat germ RNA ligase which has been partially purified on the basis of its ability to participate in in vitro splicing of yeast tRNA precursors (Gegenheimer, P., Gabius, H-J., Peebles, C.L., and Abelson, J. (1983) J. Biol. Chem. 258, 8365-8373). The preparation catalyzes the ligation of oligoribonucleotide **substrates** forming a 2'-phosphomonoester, 3',5'-phosphodiester linkage. The 5' terminus of an RNA **substrate** can have either a 5'-hydroxyl or a **5'-phosphate**. The **5'-phosphate** , which for a 5'-hydroxyl **substrate** can be introduced by a **polynucleotide** kinase activity in the **preparation**, is incorporated into the ligated junction. The 3' terminus can have either a 2',3'-cyclic phosphate or a 2'-phosphate. 2',3'-Cyclic phosphates can be converted into 2'-phosphates by a 2',3'-cyclic phosphate, 3'-phosphodiesterase activity in the preparation. The 2'-phosphate of the ligated product is derived from the phosphate at the 3' terminus of the **substrate**. Ligation proceeds with the adenylylation of the 5'-phosphorylated terminus to form an intermediate with a 5',5'-phosphoanhydride bond.

L52 ANSWER 10 OF 11 MEDLINE
AN 76049760 MEDLINE

two steps: hydrolysis of the 3'-phosphate followed by ATP-mediated phosphorylation of the 5'-OH end.

L52 ANSWER 6 OF 11 MEDLINE
AN 86077588 MEDLINE
TI Synthesis and characterization of poly[d(G-z5C)]. B-Z transition and inhibition of DNA methylase.
AU McIntosh L P; Zielinski W S; Kalisch B W; Pfeifer G P; Sprinzl M; Drahovsky D; van de Sande J H; Jovin T M
SO Biochemistry, (1985 Aug 27) 24 (18) 4806-14.
Journal code: A0G. ISSN: 0006-2960.
AB Deoxy-5-azacytidine **5'-triphosphate** was synthesized and used as a **substrate** for the enzymatic **synthesis** of the **polynucleotide** poly[d(G-z5C)]. Whereas the triphosphate decomposes in solution, the azacytosine analogue incorporated into DNA is stable under conditions preserving the double-helical structure. Poly[d(G-z5C)] undergoes the transition to the left-handed Z conformation at salt (NaCl and MgCl2) concentrations approximately 30% higher than those required for unsubstituted poly[d(G-C)]. However, the incorporation of azacytidine potentiates the formation at room temperature of the Z helix stabilized by the transition metal Mn2+; in the case of poly[d(G-C)], a heating step is required. The spectral properties of the two polymers in the B and Z forms are similar. Both left-handed forms are recognized by anti-Z DNA immunoglobulins, indicating that the DNAs bear common antigenic features. Poly[d(G-z5C)] is not a **substrate** for the DNA cytosine 5-methyltransferase from human placenta. It is a potent inhibitor of the enzyme when tested in a competitive binding assay. These results are compatible with a very strong, possibly covalent, mode of interaction between methyltransferases and DNA containing 5-azacytosine.

L52 ANSWER 7 OF 11 MEDLINE
AN 85122685 MEDLINE
TI Use of ribonucleosides as protecting groups in **synthesis** of **polynucleotides** with phosphorylated terminals.
AU Nadeau J G; Singleton C K; Kelly G B; Weith H L; Gough G R
SO Biochemistry, (1984 Dec 4) 23 (25) 6153-9.
Journal code: A0G. ISSN: 0006-2960.
AB Two new protected 5'-ribonucleotides, 2'3'-O-bis(4,4'-dimethoxytrityl)uridine 5'-(4-chlorophenyl phosphate) and 2',3'-O-(methoxymethylene)uridine 5'-(4-chlorophenyl phosphate), form the basis of a chemical procedure for phosphorylating the 5'-ends of DNA fragments synthesized by the phosphotriester approach. Condensation of either of these mononucleotide units with the free 5'-hydroxyl of an otherwise fully protected oligomer results in high-yield formation of a 5'-5' triester linkage. Subsequently, the terminal ribonucleotide of the deprotected product rU5'-5'd(N-Nn-N) can be cleaved by periodate oxidation of its 2',3'-**cis-hydroxyl** system followed by beta-elimination, leaving its phosphate attached to the 5'-hydroxyl group of the oligodeoxyribonucleotide. This procedure together with a tactic employing a 2',3'-O-acylribonucleotide residue at the

analysis of progeny phages indicates that N4-aminocytosine residue in DNA causes A to G or G to A mutation in the position opposite to the site where N4-aminocytosine should be incorporated.

L52 ANSWER 4 OF 11 MEDLINE
AN 89030700 MEDLINE
TI Differential inhibition of various deoxyribonucleic acid polymerases by Evans blue and aurintricarboxylic acid.
AU Nakane H; Balzarini J; De Clercq E; Ono K
SO Eur J Biochem, (1988 Oct 15) 177 (1) 91-6.
Journal code: EMZ. ISSN: 0014-2956.
AB The inhibitory effects of two anionic compounds, Evans blue and aurintricarboxylic acid (ATA), on various kinds of **polynucleotide-synthesizing** enzymes were examined. Under the assay conditions, optimized for each enzyme species, both these compounds strongly inhibited the activities of the purified human DNA polymerases alpha, beta, gamma, and DNA primase as well as those of DNA polymerase I and RNA polymerase from Escherichia coli and Rauscher leukemia virus reverse transcriptase. ATA was particularly effective in inhibiting retroviral reverse transcriptase and cellular DNA polymerase alpha. Evans blue, which is a structural analogue of suramin, exerted its inhibitory action largely by competing with the template.primer for the same binding site of the enzyme. On the other hand, ATA inhibited most, if not all, of these enzyme activities noncompetitively with respect to either the template.primers or **nucleoside 5'-triphosphate substrates**. The inhibition constants for ATA were, in general, smaller than those for Evans blue.

L52 ANSWER 5 OF 11 MEDLINE
AN 87040776 MEDLINE
TI Chromatin 3'-phosphatase/5'-OH kinase cannot transfer phosphate from 3' to 5' across a strand nick in DNA.
AU Habraken Y; Verly W G
SO Nucleic Acids Res, (1986 Oct 24) 14 (20) 8103-10.
Journal code: O8L. ISSN: 0305-1048.
AB Rat liver chromatin contains a 3'-phosphatase/5'-OH kinase which may be involved in the repair of DNA strand breaks limited by 3'-phosphate/5'-OH ends. In order to determine whether the phosphate group can be transferred directly from the 3' to the 5' position, a **polynucleotide** duplex was **synthesized** between poly (dA) and oligo (dT) segments which had 3'-[32P]phosphate and 5'-OH ends. The oligo (dT) segments were separated by simple nicks as shown by the ability of T4 DNA ligase to seal the nick after the 3'-phosphate was removed by a phosphatase and the 5' end was phosphorylated with a kinase. The chromatin 3'-phosphatase/5'-OH kinase was unable to transfer phosphate directly from the 3' to the 5' end of the oligo (dT) segments in the original duplex; ATP was needed to phosphorylate the 5'-OH end. It is concluded that the chromatin 3'-phosphatase/5'-OH kinase is unable to convert a 3'-phosphate/5'-OH nick which cannot be repaired by DNA ligase directly into a 3'-OH/**5'-phosphate** nick which can be repaired by DNA ligase; the chromatin enzyme rather acts in

endonuclease EcoRV.
AU Cosstick R; Li X; Tuli D K; Williams D M; Connolly B A; Newman P C
SO Nucleic Acids Res, (1990 Aug 25) 18 (16) 4771-8.
Journal code: O8L. ISSN: 0305-1048.
AB An improved procedure for the preparation of 3-deaza-2'-deoxyadenosine (d3CA) is described which is suitable for the synthesis of gram quantities of this analogue. Using phosphoramidite chemistry d3CA has been incorporated into the Eco RV restiction endonuclease recognition sequence (underlined) present in the self-complementary dodecamer d(GACGATATCGTC). The modified oligonucleotides have been thoroughly characterised by **nucleoside** composition analysis, circular dichroism and thermal melting studies. Studies with Eco RV show that incorporation of d3CA into either the central or outer dA-dT base-pair results in a substantial reduction in the rate of cleavage. The two-step conversion of d3CA to 3-deaza-2'-deoxyadenosine-**5'-O-triphosphate** (d3CATP) via the 5'-O-tosylate is also described. d3CATP is not a **substrate** in the poly[d(AT)].poly[d(AT)] primed polymerisation for either E. coli DNA polymerase I or Micrococcus luteus DNA polymerase. In a more detailed kinetic analysis d3CATP was shown to be a competitive inhibitor of E. coli DNA polymerase I with respect to dATP.

L52 ANSWER 3 OF 11 MEDLINE
AN 90331136 MEDLINE
TI Molecular mechanism of N4-aminocytidine mutagenesis.
AU Negishi K
SO Yakugaku Zasshi, (1990 May) 110 (5) 293-303. Ref: 33
Journal code: JON. ISSN: 0031-6903.
AB N4-Aminocytidine is strongly mutagenic towards E. coli, S. typhimurium, B. subtilis and coliphages phi X174 and M13mp2. It also causes mutations in mammalian cell lines and somatic cell mutations in D. melanogaster. The sequence analysis of deoxyribonucleic acid (DNA) from mutated phages revealed that N4-aminocytidine induces both adenine-thymine (AT) to guanine-cytosine (GC) and GC to AT transitions. No transversions are detectable. When E. coli and the mammalian cells were cultured in the presence of [3H]-N4-aminocytidine, [3H]-N4-aminodeoxycytidine was found in their DNA. It is likely that N4-aminocytidine is metabolized within the cells into N4-aminodeoxy-cytidine **5'-triphosphate** (dCamTP), which is then incorporated into DNA, thereby causing base-pair transitions. To prove this hypothesis, we studied the incorporation of dCamTP into **polynucleotides** in the in vitro DNA **synthesis** catalyzed by E. coli DNA polymerase I large fragment (Klenow enzyme) and DNA polymerase alpha from a mouse cell line. Both polymerases catalyze incorporation of dCamTP into DNA efficiently in place of dCTP opposite guanine, and less efficiently, but to a significant extent, in place of dTTP opposite adenine. These observations prove the erroneous nature of dCamTP as a **substrate** for DNA synthesis. DNA containing N4-aminocytosine was prepared by the incorporation of dCamTP into single-stranded phage DNA annealed to complementary oligonucleotides. The DNA was transfected to E. coli cells. The

TI PROPERTIES OF A TERMINAL DEOXY RIBO NUCLEOTIDYL TRANSFERASE EC-2.7.7.31 ISOLATED FROM WHEAT GERM.
AU BRODNIEWICZ-PROBA T; BUCHOWICZ J
CS INST. BIOCHEM. BIOPHYS., POL. ACAD. SCI., 02-532 WARSAW, POL.
SO BIOCHEM J 191 (1). 1980. 139-146. CODEN: BIJOAK ISSN: 0306-3275
LA English
AB An enzyme able to **catalyse** the polymerization of deoxyribonucleotides in a **template-independent** manner was isolated from dry wheat germ. This activity is associated with a soluble protein which is homogeneous with respect to MW (.apprx. 500,000) and, under denaturing conditions, dissociates into product of 2 size classes, 67,000 and 45,000 daltons, respectively. The enzyme-**catalysed** polymerization can be primed by oligo- as well as poly-deoxyribonucleotides, and is highly efficient (234 nmol/h per mg of finally purified protein) when only one of the 4 deoxyribonucleoside 5'-triphosphates is present in the incubation mixture. An extension of the 3'-hydroxy termini of polydeoxyribonucleotide chains for .apprx. 40 nucleotide residues was achieved when non-denatured DNA and [3H]dTTP were used as the primer and substrate respectively. The enzyme isolated from wheat germ shares **catalytic** properties with the terminal deoxynucleotidyltransferase of mammalian thymus. Unlike that transferase, the plant enzyme prefers non-denatured to single-stranded DNA as primer, and requires both Mg2+ and Mn2+ ions for maximal activity.

L68 ANSWER 7 OF 11 MEDLINE
AN 79179782 MEDLINE
TI Addition of oligonucleotides to the 5'-terminus of DNA by T4 RNA ligase.
AU Higgins N P; Geballe A P; Cozzarelli N R
SO Nucleic Acids Res, (1979 Mar) 6 (3) 1013-24.
Journal code: O8L. ISSN: 0301-5610.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 7909
AB Bacteriophage T4-induced RNA ligase **catalyzes** the controlled **template-independent** addition of RNA to the 5'-phosphoryl end of large DNA molecules. Restriction enzyme-generated fragments of Co1E1 DNA with completely basepaired or cohesive ends and linear single-stranded oX174 viral DNA were all good substrates. DNA molecules from 10 to 6000 nucleotides long were quantitatively joined in an hour to a number of different RNA homopolymers. The most efficient of these was A(pA)5; I(pI)5 and C(pC)5 were also utilized while U(pU)5 was not. The optimum ribohomopolymer length was six nucleotides. Joining of ribohomopolymers between 10 and 20 nucleotides long occurred at approximately 1/2 the maximal rate and a trimer was the shortest substrate. Thus RNA ligase provides a method for generating extensions of predetermined length and base composition at the 5'-end of large DNA molecules that complements the available

procedures for extending the 3'-hydroxyl terminus of DNA.

L68 ANSWER 8 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS
AN 78:177116 BIOSIS
DN BA65:64116
TI A **TEMPLATE INDEPENDENT** RIFAMPICIN SENSITIVE POLY ADENYLIC-ACID POLY URIDYLIC-ACID SYNTHESIZING ACTIVITY PRESENT IN BACILLUS-SUBTILIS.
AU HALLING S M; DOI R H
CS DEP. BIOCHEM. BIOPHYS., UNIV. CALIF., DAVIS, CALIF. 95616, USA.
SO BIOCHEM BIOPHYS RES COMMUN 80 (2). 1978 349-354. CODEN: BBRCA9 ISSN: 0006-291X
LA English
AB A **template independent** poly(A).cntdot.poly(U) synthesizing activity was isolated from B. subtilis. This activity is eluted from a DNA-cellulose column along with DNA-dependent RNA polymerase. The column fractions which exhibit this activity contain RNA polymerase holoenzyme plus a polypeptide which is slightly larger than .sigma. factor; pure RNA polymerase holoenzyme did not synthesize poly(A).cntdot.poly(U). The activity was dependent on the presence of ATP, UTP and Mn2+ (Mg2+ could not substitute), and was inhibited by rifampicin, streptolydigin and Cibacron Blue. The incorporation of nucleotides was not linear with time, but appeared after a lag period. A modified form of DNA-dependent RNA polymerase analogous to Escherichia coli holoenzyme II is **catalyzing** the synthesis of poly(A).cntdot.poly(U).

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DN BA67:47717
TI A SPECIFIC ASSAY FOR YEAST RNA POLYMERASES EC-2.7.7.6 IN CRUDE CELL EXTRACTS.
AU RUET A; SENTENAC A; FROMAGEOT P
CS DEP. BIOL., SERV. BIOCHIM., CENT. ETUD. NUCL. SACLAY, BATIM. 142, BP 2, F-91190 GIF-SUR-YVETTE, FR.
SO EUR J BIOCHEM 90 (2). 1978. 325-330. CODEN: EJBCAI ISSN: 0014-2956
LA English
AB With the object of isolating yeast mutants altered in DNA-dependent RNA polymerases [EC 2.7.7.6], a specific assay for the various classes of RNA polymerases was developed, using crude protein extracts as the source of enzyme. Yeast extracts incorporated AMP, UMP and CMP residues into acid-precipitable material in **template-independent** reactions which obscured DNA-dependent RNA polymerase activities. GMP incorporation was exclusively template-dependent. Therefore cytidine-rich templates were selected. A simple and sensitive assay for RNA polymerase B was based on its ability to use the ribohomopolymer (rC)n as template and its exclusive requirement for Mn2+ as activator cation. The specificity of the assay was further shown by the fact that (rG)n synthesis under these conditions was totally inhibited by 50 .mu.g/ml of .alpha.-amanitin, a sensitivity ascribed only to RNA polymerase B. The other 2 forms of enzymes, RNA polymerases A and C, were assayed using the ribohomopolymer d(I-C)n as template in the presence of Mg2+

as activator cation, under the correct ionic conditions. At low ionic strength and in the presence of Mg2+, d(I-C)n-directed synthesis of r(C-G)n was **catalyzed** by enzymes A and C. In contrast, at high ionic strength or in the presence of 2 mg/ml of .alpha.-amanitin, the activity of RNA polymerase A was inhibited (.apprxeq. 50%). Thus the activities of A and C enzymes was calculated by the difference of activities measured on low salt and high salt. It was found that RNA polymerases A and C each contributed to about 50% of the r(G-C)n synthesis. Several parameters influencing the assay were investigated. In particular, RNA polymerase activities were found to be independent of cell growth state. In order to use these methods for the rapid screening of a large number of clones, the processing of the assays was modified to permit a rapid comparison by visual tests.

L68 ANSWER 10 OF 11 BIOSIS COPYRIGHT 1995 BIOSIS
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DN BA64:7491
TI PURIFICATION AND PROPERTIES OF METHIONINE TRANSFER RNA INITIATOR BINDING FACTOR FROM WHEAT GERM.
AU SPREMULLI L L; WALTHALL B J; LAX S R; RAVEL J M
SO ARCH BIOCHEM BIOPHYS 178 (2). 1977 565-575. CODEN: ABBIA4 ISSN: 0003-9861
LA Unavailable
AB The 40-60% ammonium sulfate fraction of the postribosomal supernatant of wheat germ **catalyzes** the binding of Met-tRNAf (initiator tRNA) to 40 S ribosomal subunits, and in addition, interacts with Met-tRNAf in the absence of 40 S ribosomal subunits and Mg2+ to form a complex that is retained on a Millipore filter. Upon chromatography on diethylaminoethyl (DEAE)-cellulose, 2 fractions having this latter activity were obtained, a 0.05 M KCl fraction and a 0.12 M KCl fraction. The 0.12 M KCl fraction, but not the 0.05 M KCl fraction, contained the factor that **catalyzes** the binding of Met-tRNAf to 40 S ribosomal subunits. When the 0.12 M KCl fraction from DEAE-cellulose was subjected to chromatography on Sephadex G-200 and on phosphocellulose, both activities copurified throughout these procedures, and both were purified more than 300-fold. Both activities have similar heat-inactivation profiles. The formation of a complex between the factor and Met-tRNAf in the absence of 40 S subunits is stimulated 3- to 4-fold by GTP and is inhibited by GDP. Ternary complex formation is specific for Met-tRNAf and is decreased in the presence of Mg2+. The binding of Met-tRNAf to 40 S subunits is stimulated 3- to 4-fold by AUG, and when AUG is present, omission of GTP reduces the amount of Met-tRNAf bound by only about 30%. The factor **catalyzes** the binding of met-tRNAm to 40 S subunits about 1/5 as well as Met-tRNAf and **catalyzes** the poly(U)-directed binding of Phe-tRNA by about 50% as well. The binding of Met-tRNAf to 40 S subunits that occurs in the absence of template is GTP dependent, being reduced more than 90% by the omission of GTP. No detectable binding of Phe-tRNA to 40 S subunits is observed in the absence of poly(U[uracil]), indicating that **template-independent** binding is specific for Met-tRNAf. Both ternary complex formation and **template-**

independent binding of Met-tRNAf to 40 S subunits are reduced more than 90% by treatment of the enzyme with N-ethylmaleimide. Binding of Met-tRNAf to 40 S subunits in the presence of AUG is not affected by treatment of the enzyme with N-ethylmaleimide. Apparently in wheat germ, the Met-tRNAf binding activities described above may reside in a single oligomeric protein.

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AN 77:200385 BIOSIS
DN BA64:22749
TI SEPARATION OF THE ENZYME **CATALYZING** POLYMERIZATION OF DEOXY RIBO NUCLEOSIDE DI PHOSPHATES FROM ESCHERICHIA-COLI DNA POLYMERASE I PREPARATIONS.
AU NAZARENKO I A; BELYAEVA T A; VOROB'EVA N V; NEKHANEVICH I F; POTAPOV V A; ROMASHCHENKO A G; YUSHKOVA L F; SALGANIK R I
SO MOL BIOL (MOSC) 10 (6). 1976 (RECD 1977) 1231-1237. CODEN: MOBIBO ISSN: 0026-8984
LA Unavailable
AB The enzyme which **catalyzes template independent** synthesis of polydeoxynucleotides from deoxynucleoside diphosphates was separated from E. coli DNA polymerase I by DEAE-cellulose chromatography followed by ultrafilitration through the M-50 Amicon filter. The ultrafiltration data indicate that the MW of the enzyme is .ltoreq. 50000. The enzyme is not able for deoxynucleoside triphosphates, ribonucleoside di- or triphosphates as substrates for the polymerization. The reaction of **template independent** polymerization proceeds with a lag period varying from 2-20 h (for different preparations of enzyme) and is activated by Mg2+ (the optimal concentrations 1-2r .cntdot. 10-3 M). The pH optimum of the reaction is 8.5. The optimal concentration of deoxyribonucleoside diphosphates is 10-3 M and its increase strongly inhibits polymerization. The enzyme was called deoxynucleoside diphosphate: oligonucleotide deoxynucleotidyltransferase (**catalyzing** polymerization without template). The presence of the enzyme in the preparations of E. coli DNA-polymerase I can explain the ability of the latter to **catalyze** the untemplated synthesis of poly dG:poly dC.

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